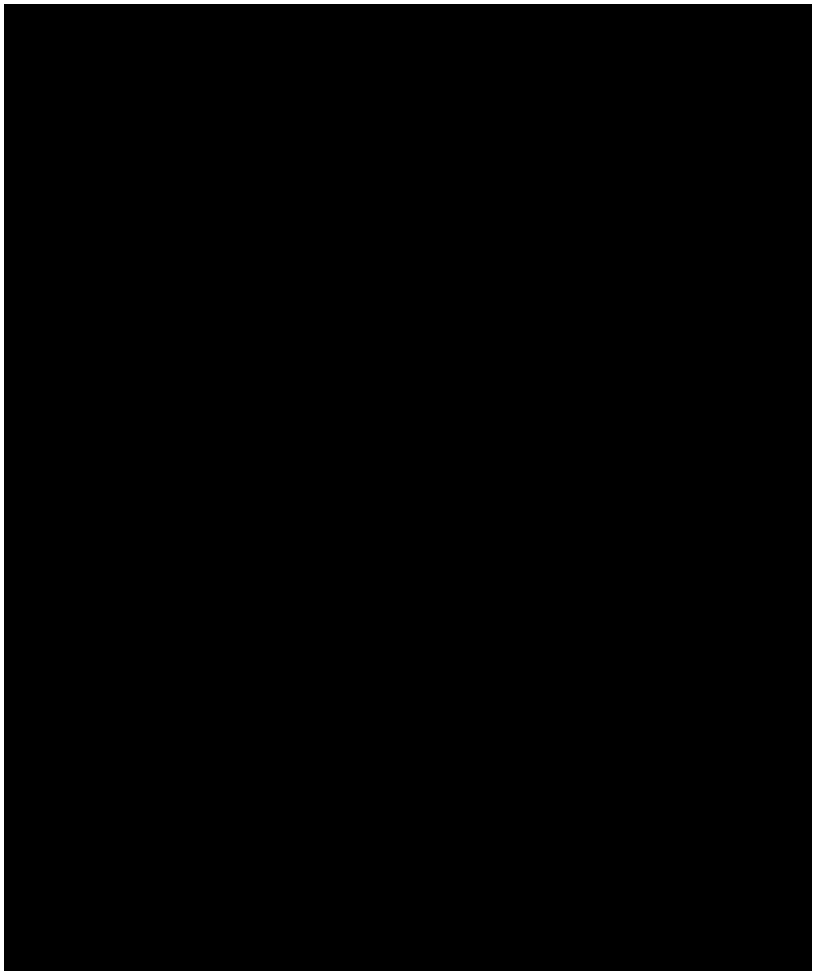
An Archaeological Survey of Newton County: Enhancement of a Data Deficient Region

Grant # 18-14-FFY-03



By: Jamie M. Leeuwrik, Christine Thompson, Shelbi Long, Kevin C. Nolan, and Erin Steinwachs

Principal Investigators: Christine Thompson and Kevin C. Nolan

Reports of Investigation 88 Volume 1
May 2015

Applied Anthropology Laboratories, Department of Anthropology
Ball State University, Muncie, IN 47306-0439
Phone: 765-285-5328 Fax: 765-285-2163
Web Address: http://www.bsu.edu/aal

An Archaeological Survey of Newton County: Enhancement of a Data Deficient Region

Grant # 18-14-FFY-03

By:
Jamie M. Leeuwrik, Christine Thompson, Kevin C. Nolan, Shelbi Long, and Erin Steinwachs

Christine Thompson and Kevin C. Nolan
Principal Investigators

Reports of Investigation 88
Volume 1
May 2015

Applied Anthropology Laboratories, Department of Anthropology
Ball State University, Muncie, IN 47306-0439
Phone: 765-285-5328 Fax: 765-285-2163
Web Address: http://www.bsu.edu/aal

ACKNOWLEDGEMENT OF STATE AND FEDERAL ASSISTANCE

This project has been funded in part by a grant from the U.S. Department of the Interior, National Park Service's Historic Preservation Fund administered by the Indiana Department of Natural Resources, Division of Historic Preservation and Archaeology. The project received federal financial assistance for the identification, protection, and/or rehabilitation of historic properties and cultural resources in the State of Indiana. However, the contents and opinions contained in this publication do not necessarily reflect the views or policies of the U.S. Department of the Interior, nor does the mention of trade names or commercial products constitute endorsement or recommendation by the U.S. Department of the Interior. Under Title VI of the Civil Rights Act of 1964 and Section 504 of the Rehabilitation Act of 1973, the U.S. Department of the Interior prohibits discrimination on the basis of race, color, national origin, or disability in its federally assisted programs. If you believe that you have been discriminated against in any program, activity, or facility as described above, or if you desire further information, please write to: Office of Equal Opportunity, U.S. Department of the Interior, 1849 C Street, N.W., Washington, D.C. 20240.

Acknowledgements

This project was a shared effort of numerous people. I am indebted to the following individuals for their assistance in completing this project.

I would like to thank the Division of Historic Preservation and Archaeology (DHPA) and Ball State University for making this project possible. This project was funded in part by a Department of the Interior grant administered by the Division of Historic Preservation and Archaeology, Indiana Department of Natural Resources. Thanks to DHPA staff Malia Vanaman and Mitch Zoll for their assistance in this project. Matching funds for this project were furnished by Ball State University. Thanks to Chad Paskiewicz in Contracts and Grants at Ball State for managing the accounting for this project. Thank you to Christine Thompson for beginning the research for this project and writing the proposal. Thanks to the Department of Anthropology for support and assistance throughout this project.

The project could not have been completed without access to agricultural fields in Newton County. I would especially like to thank the following landowners: [redacted] for granting us permission to survey their land. I appreciate your interest in this project.

The field work and laboratory processing was completed by AAL Senior Archaeologist Kevin C. Nolan, AAL Archaeologist Christine Thompson, AAL Administrative Assistant and Archaeologist Amber Yuellig, the authors and the following Ball State students: Colin Macleod, Trey Hill, Nora Hillard, Kaylee Jo Ellrod, Jenna Treiber, Chance Mayfield, Justin Fleetwood-Goolsby, Caitlin Harrison, Eyn Phillips, Dane Rowles, Lindsey Jessie, Nick Nelson, Austin Poynter, Stephanie Hoelle, Lauren Veach, Emily Butcher, Eric Olson, Faye Lichtsinn, Erin Donovan, Charity Munro, Felicia Konrad, and Meghan Wolfe.

I would like to thank Mark Hill and Mark Groover for their help with artifact identification. I would like to thank Amber Yuellig for organizing field crews and ordering supplies. I would especially like to thank Christine Thompson and Kevin C. Nolan for their help and guidance in all aspects of this project. Without their organization, leadership, archaeological and accounting skills, I would have been unable to perform the tasks required.

Jamie Leeuwrik

Abstract

The Applied Anthropology Laboratories (AAL) at Ball State University conducted a data enhancement project for archaeological resources in Newton County, Indiana for a FY2014 Historic Preservation Fund Grant (Grant #18-14-FFY-03). This Historic Preservation Fund grant project investigated the archaeological resources of Newton County, Indiana with a focus on the Iroquois and Kankakee Rivers and the southern half of the county. Approximately 902.84 acres (365.33 hectares) of agricultural land were surveyed and 89 new archaeological sites were recorded. The survey recovered 55 prehistoric artifacts and 1274 historic artifacts from eight parcels of land within Newton County. No human remains were discovered as a result of this grant project. Cultural periods that are represented in the artifact assemblage include Late Archaic components that were documented from the precontact era, in addition to Historic components. The average site density recorded for the project area for precontact sites was one site per 36.11 acres and for Historic sites was one site per 12.20 acres.

Table of Contents

Acknowledgements ii
Abstract iii
Introduction 1
Background 2
Environmental Setting 2
Location 2
Geology 3
Physiography 9
Soils 10
Water Resources 12
Climate 13
Biotic Communities 16
Summary 20
Archaeological Background 20
Culture History 25
Historic 29
Archaeological Survey 31
Introduction 31
Methods 31
Field Survey 31
Laboratory 32
Archaeological Survey Results 36
Survey Area 1 37
Artifacts 40
Sites 40
Density 40
Survey Area 2 43
Artifacts 46
Sites 50
Density 50
Survey Area 3 53
Artifacts 56
Sites 59
Density 60
Survey Area 4 63
Artifacts 66
Sites 68
Density 69
Survey Area 5 72

Artifacts 75
Sites 82
Density 83
Survey Area 6 86
Artifacts 89
Sites 91
Density 92
Survey Area 7 95
Artifacts 98
Sites 103
Density 104
Survey Area 8 106
Artifacts 109
Sites 110
Density 110
Collector Visits 113
Summary/Discussion 127
Artifacts 127
Chert 127
Sites 130
Historic Settlement 131
Density 131
Recommendations 132
Public Outreach and Student Involvement 134
Alignment with Cultural Resources Management Plan for Indiana 138
Research Questions 140
References Cited 152

List of Figures

Figure 1: Newton County within the state of Indiana (based on Yellowmap World Atlas 2015).. 2
Figure 2: Newton target area within the Iroquois River Watershed (based on Yellowmap World Atlas 2015). 3
Figure 3: Chert outcrop locations in Indiana (digitized by Brad Painter from Cantin 2008). 4
Figure 4: Example of Attica Chert from the Ball State University AAL Chert Collection (photo by Ball State University). 5
Figure 5: Example of Liston Creek Chert from the Ball State University AAL Chert Collections (photo by Ball State University). 6
Figure 6: Example of Kenneth Chert from the Ball State University AAL Chert Collection (photo by Ball State University). 6
Figure 7: Location of Newton County and the Cartersburg Till Member (based on Wayne 1966:26). 8
Figure 9: Physiographic divisions and survey areas in Newton County 9
Figure 10: Soil Associations in Newton County (STATSGO, USDA/NRCS 2002). 12
Figure 10: Level IV Ecoregions (Woods et al. 2003) for Northwest Indiana. 15
Figure 11: Vegetation Sequence of Central Indiana (Cochran and Buehrig 1985:9, after Shane 1976). 17
Figure 12: Pre-Euro-American Settlement Vegetation after Petty and Jackson (1966). 18
Figure 12: Civil Township locations in Newton County (USGS 7.5' Washington, Indiana Quadrangle). 22
Figure 13: 2011 Aerial (Indiana Data Spatial Service) showing the location of the eight survey areas within Newton County. 36
Figure 14: A portion of the map of Iroquois Township, Newton County in the "Illustrated Historical Atlas of the State of Indiana" (Andreas 1968) showing Survey Area 1. 38
Figure 15: A portion of the USGS 7.5' [redacted], Indiana Quadrangles showing the location of Survey Area 1. 39
Figure 16: A portion of the USGS 7.5' [redacted], Indiana Quadrangles showing the lack of sites in Survey Area 1. 41
Figure 17: 2011 Aerial (Indiana Data Spatial Service) showing the lack of sites in Survey Area 1. 42
Figure 18: A portion of the map of [redacted] Township, Newton County in the "Illustrated Historical Atlas of the State of Indiana" (Andreas 1968) showing Survey Area 2. 44
Figure 19: A portion of the USGS 7.5' [redacted], Indiana Quadrangle showing the location of Survey Area 2. 45
Figure 20: Representative historic ceramic artifacts from Survey Area 2 (photo by Felicia Konrad, Ball State University). 48
Figure 21: Representative historic stoneware artifacts from Survey Area 2 (photo by Felicia Konrad, Ball State University). 48

Figure 22: Representative historic glass artifacts from Survey Area 2 (photo by Felicia Konrad, Ball State University). 49
Figure 23: Representative historic metal artifacts from Survey Area 2 (photo by Felicia Konrad, Ball State University). 49
Figure 24: A portion of the USGS 7.5' [redacted] Indiana Quadrangle showing the location of sites 12-N-38 to 48. 51
Figure 25: 2011 Aerial (Indiana Data Spatial Service) showing the location of sites 12-N-38 to 48. 52
Figure 32: Late Archaic biface, biface blank, and groundstone found by [redacted] in pasture land close to Survey Area 3. 53
Figure 26: A portion of the map of [redacted] Township, Newton County in the "Illustrated Historical Atlas of the State of Indiana" (Andreas 1968) showing Survey Area 3. 54
Figure 27: A portion of the USGS 7.5' [redacted], Indiana Quadrangle showing the location of Survey Area 3. 55
Figure 28: Proximal Flake, Heat treated with use wear recovered from 12-N-53 in Survey Area 3 (photo by Felicia Konrad, Ball State University). 57
Figure 29: Representative historic ceramic artifacts from Survey Area 3 (photo by Felicia Konrad, Ball State University). 58
Figure 30: Representative historic glass artifacts from Survey Area 3 (photo by Felicia Konrad, Ball State University). 58
Figure 31: Representative historic metal artifacts from Survey Area 3 (photo by Felicia Konrad, Ball State University). 59
Figure 33: A portion of the USGS 7.5' [redacted], Indiana Quadrangle showing the location of sites 12-N-49 to 57. 61
Figure 34: 2011 Aerial (Indiana Data Spatial Service) showing the location of sites 12-N-49 to 57. 62
Figure 35: A portion of the map of [redacted] Township, Newton County in the "Illustrated Historical Atlas of the State of Indiana" (Andreas 1968) showing Survey Area 4. 64
Figure 36: A portion of the USGS 7.5' [redacted], Indiana Quadrangle showing the location of Survey Area 4. 65
Figure 37: A core recovered from 12-N-61 in Survey Area 4 (photo by Felicia Konrad, Ball State University). 67
Figure 38: Representative historic ceramic artifacts from Survey Area 4 (photo by Felicia Konrad, Ball State University). 67
Figure 39: Representative historic glass artifacts from Survey Area 4 (photo by Felicia Konrad, Ball State University). 68
Figure 40: A portion of the USGS 7.5' [redacted], Indiana Quadrangle showing the location of sites 12-N-58 to 67. 70
Figure 41: 2011 Aerial (Indiana Data Spatial Service) showing the location of sites 12-N-58 to 67. 71

Figure 42: A portion of the map of [redacted] Township, Newton County in the “Illustrated Historical Atlas of the State of Indiana” (Andreas 1968) showing Survey Area 5. 73
Figure 43: A portion of the USGS 7.5’ [redacted], Indiana Quadrangle showing the location of Survey Area 5. 74
Figure 44: A Brewerton Side-Notched diagnostic point from 12-N-75 (photo by Felicia Konrad, Ball State University). 78
Figure 45: Unhafted Biface with fossil impression recovered from 12-N-90 in Survey Area 5 (photo by Felicia Konrad, Ball State University). 78
Figure 46: Representative historic ceramic artifacts from Survey Area 5 (photo by Felicia Konrad, Ball State University). 79
Figure 47: Representative historic ceramic artifacts from Survey Area 5 (photo by Felicia Konrad, Ball State University). 79
Figure 48: Representative historic glass artifacts from Survey Area 5 (photo by Felicia Konrad, Ball State University). 80
Figure 49: Representative historic glass artifacts from Survey Area 5 (photo by Felicia Konrad, Ball State University). 80
Figure 50: Representative historic metal artifacts from Survey Area 5 (photo by Felicia Konrad, Ball State University). 81
Figure 51: Glass fragment impressed "Bottling Works Lafayette" recovered from 12-N-91 in Survey Area 5 (photo by Felicia Konrad, Ball State University). 81
Figure 52: Metal cat figurine recovered from 12-N-93 in Survey Area 5 (photo by Felicia Konrad, Ball State University). 82
Figure 53: A portion of the USGS 7.5' [redacted] Indiana Quadrangle showing the location of sites 12-N-68 to 93. 84
Figure 54: 2011 Aerial (Indiana Data Spatial Service) showing the location of sites 12-N-68 to 93. 85
Figure 55: A portion of the map of [redacted] Township, Newton County in the “Illustrated Historical Atlas of the State of Indiana” (Andreas 1968) showing Survey Area 6. 87
Figure 56: A portion of the USGS 7.5’ [redacted], Indiana Quadrangle showing the location of Survey Area 6. 88
Figure 57: An unidentified point from site 12-N- 273 (photo by Felicia Konrad, Ball State University). 90
Figure 58: Representative historic ceramic artifacts from Survey Area 6 (photo by Felicia Konrad, Ball State University). 90
Figure 59: Representative historic glass artifacts from Survey Area 6 (photo by Felicia Konrad, Ball State University). 91
Figure 60: A portion of the USGS 7.5' [redacted], Indiana Quadrangle showing the location of sites 12-N-94 to 95 and 12-N-262 to 279. 93
Figure 61: 2011 Aerial (Indiana Data Spatial Service) showing the location of sites 12-N-94 to 95 and 12-N-262 to 279. 94

Figure 70: Stemmed point and axe from [redacted] collection, found near Survey Area 7. 95
Figure 62: A portion of the map of [redacted] Township, Newton County in the "Illustrated Historical Atlas of the State of Indiana" (Andreas 1968) showing Survey Area 7. 96
Figure 63: A portion of the USGS 7.5' [redacted], Indiana Quadrangle showing the location of Survey Area 7. 97
Figure 64: A Matanzas Side-Notched diagnostic point from 12-N-284 (photo by Felicia Konrad, Ball State University). 100
Figure 65: Representative ceramic historic artifacts from Survey Area 7 (photo by Felicia Konrad, Ball State University). 100
Figure 66: Representative historic ceramic artifacts from Survey Area 7 (photo by Felicia Konrad, Ball State University). 101
Figure 67: Representative historic glass artifacts from Survey Area 7 (photo by Felicia Konrad, Ball State University). 101
Figure 68: Representative historic metal artifacts from Survey Area 7 (photo by Felicia Konrad, Ball State University). 102
Figure 69: Shell artifacts recovered from 12-N-281 in Survey Area 7 (photo by Felicia Konrad, Ball State University). 102
Figure 71: A portion of the USGS 7.5' [redacted] Indiana Quadrangle showing the location of sites 12-N-51 and 12-N-280 to 290. 105
Figure 72: 2011 Aerial (Indiana Data Spatial Service) showing the location of sites 12-N-51 and 12-N-280 to 290. 105
Figure 73: A portion of the map of Iroquois Township, Newton County in the "Illustrated Historical Atlas of the State of Indiana" (Andreas 1968) showing Survey Area 8. 107
Figure 74: A portion of the USGS 7.5' [redacted] Indiana Quadrangle showing the location of Survey Area 8. 108
Figure 75: Representative historic artifacts from Survey Area 8 (photo by Felicia Konrad, Ball State University). 109
Figure 76: A portion of the USGS 7.5' [redacted] Indiana Quadrangle showing the location of sites 12-N-291 and 292. 111
Figure 77: 2011 Aerial (Indiana Data Spatial Service) showing the location of sites 12-N-291 to 292 112
Figure 79: Example Scan of Side Notched Points from the Carlson Collection 113
Figure 80: Example Scan of Triangular Points from the Carlson Collection 114
Figure 81: Example Scan of Corner Notched points from the Carlson Collection. 115
Figure 82: Ceramics from the Carlson Collection, Newton County Library, Morocco, Indiana (Photo by Erin A. Steinwachs, Ball State University). 118
Figure 78: A portion of [redacted] collection prior to examination. 123
Figure 79: Graduate Assistant Colin Macleod and collector [redacted] sorting the general artifact collection. 123
Figure 80: Example of a scan of corner-notched points from the general artifact collection. 124

Figure 81: Example of prehistoric pottery in [redacted] collection..... 124
Figure 82: Example of historic artifacts from the [redacted] collection..... 125
Figure 83: Students discussing the Jasper and Newton County HPF grants at the AAL Open House in October 2014 (Photo by Christine Thompson, Ball State University). 136
Figure 84: Axe and celt from [redacted] 136
Figure 85: Bannerstone from [redacted] 137
Figure 86: Bannerstone from [redacted] 137
Figure 88: Distribution of Survey Areas from the FY2014 survey on an aerial (Indiana Data Spatial Service) of Newton County. 145
Figure 89: 1832 location of Beaver Lake in Newton County in relation to the Survey areas (Heistand 1951)..... 148
Figure 90: Survey Areas with Projectile Points locations north and south of the Iroquois River (Indiana Spatial Data Service). 150

List of Tables

Table 1: Soil Associations in Newton County (Barnes and Osterholz 1998) 11
Table 2: Summary of Previous Surveys in Newton County 23
Table 3: Site Components Recorded Within Newton County (DHPA 2014, Table 2) 24
Table 4: Previously Documented Points Within Newton County (Prior to Survey) 24
Table 5: Site Types Recorded Within Newton County 25
Table 6: Artifacts from Survey Area 2. 47
Table 7: Artifacts from Survey Area 3. 57
Table 8: Artifacts from Survey Area 4. 66
Table 9: Artifacts from Survey Area 5. 77
Table 10: Artifacts from Survey Area 6. 89
Table 11: Artifacts from Survey Area 7. 99
Table 12: Artifacts from Survey Area 8. 109
Table 13: Distribution of Base Types and Chert Types for the Carlson Collection from the Newton County Public Library 117
Table 13: Lithic Material Associations of the [redacted] collection 119
Table 14: Distribution of Artifact Classes within the General [redacted] Collection 121
Table 15: Chert types consistent with general artifact classes within the [redacted] general collection. 122
Table 16: Summary of verbal collector knowledge of cultural resources within Jasper and Newton Counties. 126
Table 17: Artifacts Recovered. 128
Table 18: Diagnostic Prehistoric Artifacts by Cultural Time Period. 129
Table 19: Chert Raw Materials. 130
Table 20: Site Components Recorded as a Result of Survey. 130
Table 21: Artifact Densities. 132
Table 22: Site Recommendations. 132
Table 23: Number of Site Components Added. 141
Table 24: Documented Points Within Newton County. (* indicates point added from this survey) 141
Table 25: Projectile Point Site Numbers and Cultural Periods Per Landform. 143
Table 26: Site Densities and Distributions By Landform. 143
Table 27: Number of Artifacts per Landform. 143
Table 28: Survey Area Mean Dates for Historic Artifacts 144

Introduction

The Applied Anthropology Laboratories (AAL) at Ball State University was awarded a FY2014 Historic Preservation Fund Grant to survey portions of Newton County, Indiana. The project involved a pedestrian survey of approximately 900 acres of agricultural land. The main goals of the project were to increase the site data base, resolve inconsistencies in the SHAARD database, refine the cultural chronology for the county, and examine evidence for the settlement and interaction of the Euro-American settlers and Native Americans along the Iroquois River. Specifically we hope to add to the understanding of the various prehistoric cultural periods of the county based on the low number of previously documented sites compared to the surrounding counties. We also hope to add to the understanding of the Euro-American presence and Native American interaction in Newton County. Newton County had 178 archaeological sites recorded in the State Historic Architecture and Archaeological Research Database (Division of Historic Preservation and Archaeology 2014) database prior to this survey. This investigation focused on the southern portion of Newton County, as well as areas near the Iroquois River.

The following research questions, while not exhaustive, guided this project.

1. What is the cultural chronology for Newton County?

2. What are the densities and distributions of archaeological sites along the Iroquois River and on Iroquois Till Plain within the county?

3. What is the settlement pattern for Euro-American people along the Iroquois River?

4. What is the average site density within the county?

5. Is there evidence for interaction between Euro-American settlers and Native American tribes at and after the time of settlement?

Background

Environmental Setting

To provide a framework for interpreting the data collected during this project, a review of the natural and cultural setting was undertaken. The background information presented in this report includes environmental and archaeological information concerning Newton County, Indiana.

Location

The project area is located in Newton County (Figure 1), which has an area of 258,080 acres (104.41hectares) (Barnes and Osterholz 1998:1). For the proposed research, we targeted areas surrounding the Iroquois River in the southern half of the county (Figure 2).

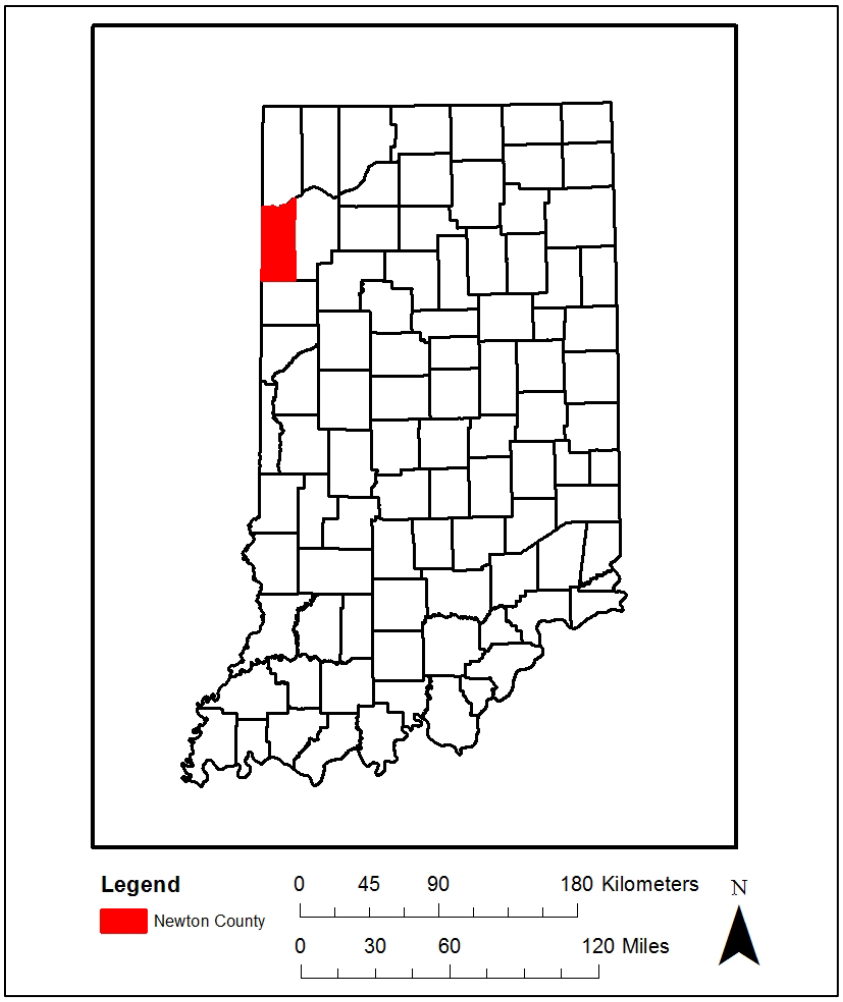


Figure 1: Newton County within the state of Indiana (based on Yellowmap World Atlas 2015).

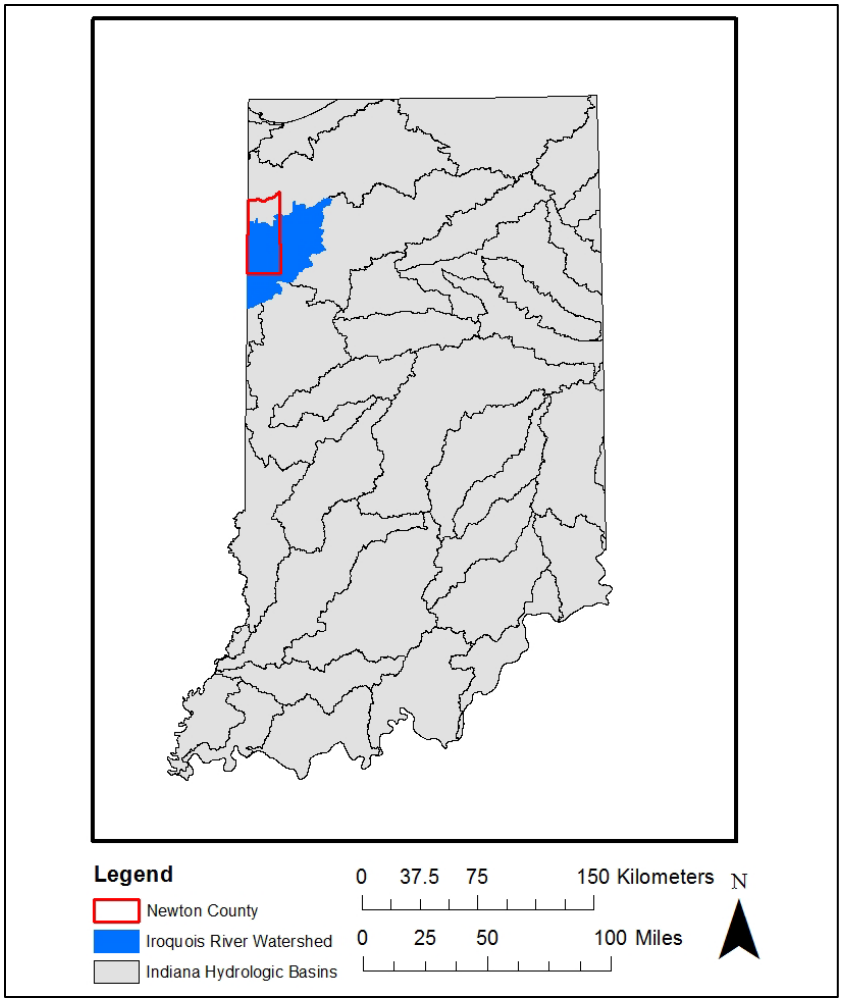


Figure 2: Newton target area within the Iroquois River Watershed (based on Yellowmap World Atlas 2015).

Geology

The structural framework of Indiana is divided into three general areas: the Illinois and the Michigan Basins which are separated by the Cincinnati Arch and its branches of the Findlay and Kankakee Arches (Gutshick 1966:9). Newton County is located within the broad region of uplift known as the Cincinnati Arch (Schneider 1966:41).

The Cincinnati Arch can then be divided further into smaller bedrock physiographic units. The project area is within one of those units known as the Rensselaer Plateau (Schneider 1966:54). The Rensselaer Plateau occupies all of Newton County. This bedrock unit is described as being physiographically distinct from other physiographic belts that are found in more southern regions of Indiana (Schneider 1966:55). Attica chert, Liston Creek chert and Kenneth chert are the documented bedrock cherts in the region around Newton County (Figure 3).

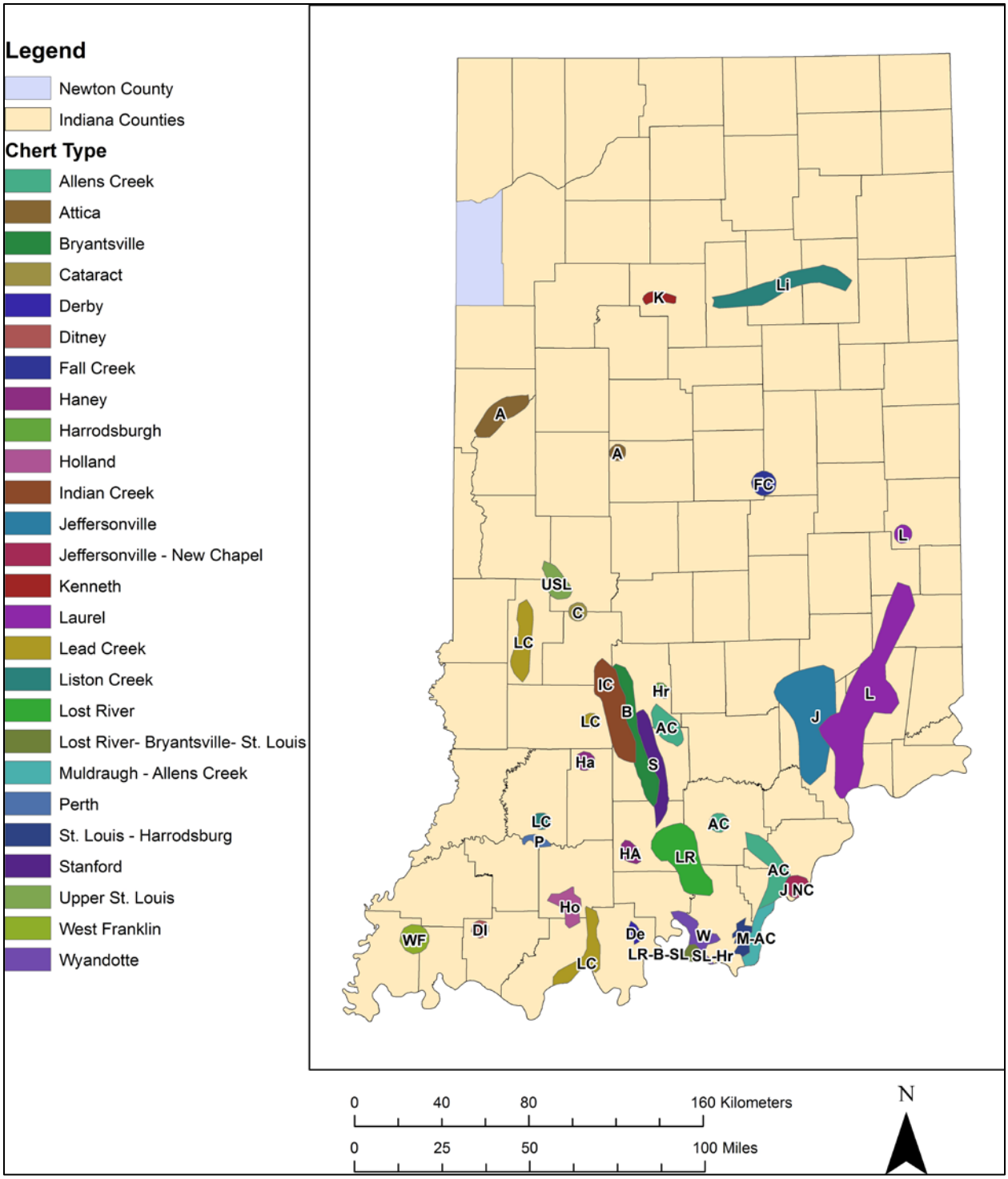


Figure 3: Chert outcrop locations in Indiana (digitized by Brad Painter from Cantin 2008).

Stratigraphically, Attica chert (Figure 4) is a member of the Muldraugh Formation of the Borden Group of the Mississippian Period (Cantin 2008:15). Also known as "Wabash Green"

and “Independence”, Attica chert is described as being blue-green in color with blue-grey streaks, bands and mottles (Cantin 2008:11-12). When heat treated, Attica chert takes on a purple color with pinkish bands and streaks (Cantin 2008:12). Texture is variable, ranging from fine-medium to medium coarse; luster is generally usually dull to slightly glossy (Cantin 2008:12). Fossil inclusions are rare with the exception of microscopic sponge spicules; however crystalline vugs have been encountered (Cantin 2008:12). Temporally, Attica chert is found in all cultural periods in Indiana however little use is documented for Woodland and Mississippian periods in Indiana (Cantin 2008:13).

Figure 4: Example of Attica Chert from the Ball State University AAL Chert Collection (photo by Ball State University).

Liston Creek chert (Figure 5) is both a nodular and bedded chert found in Liston Creek limestone which is a member of the Wabash Formation, Niagara Series, of the Silurian System (Cantin 2008:54). Liston Creek chert is always grey in color, but the shade of grey varies from very light to medium grey. As it weathers, Liston Creek chert can develop tan or brown patches. All these variations in color can occur within one sample. Textures of Liston Creek chert can be coarse to medium fine. Small calcitic or siliceous speckles are found within this chert type. These specks are most likely small fossils; however, the spots are too small to be determined as such. Liston Creek Chert was used heavily by prehistoric groups (Cantin 2008:55).

Figure 5: Example of Liston Creek Chert from the Ball State University AAL Chert Collections (photo by Ball State University).

Kenneth chert (Figure 6) is a bedded chert found in Kenneth limestone which is a member of the Salina Formation of the Silurian System (Cantin 2008:46). Kenneth chert is known to be white to light grey in color, with light to dark grey and, or brownish-grey patches. These color variations can all be present within one sample. When weathered, Kenneth chert's appearance and texture become chalky white. Fossils are found within Kenneth chert, however the fossils are mostly "siliceous blobs" (Cantin 2008:47). Information on the usage of Kenneth chert is limited. Cantin (2008:48) notes that Kenneth chert should be archaeologically found throughout the Tipton Till Plain region.

Figure 6: Example of Kenneth Chert from the Ball State University AAL Chert Collection (photo by Ball State University).

Glacial History

Modern Indiana has been shaped by the cumulative effects of three glaciations: the Kansan, Illinoian, and the Wisconsin glacial episodes (Shurig 1970:6). The glaciers were formed in the upland east area near the Hudson Bay and spread out across the North American continent, reaching its farthest in the Wabash and Ohio Valleys – south of the 38th parallel – farther than anywhere else in the Northern Hemisphere during the Pleistocene Epoch (Wayne 1966:21). Each new glacial migration brought with it tons of glacial drift that resurfaced the face of Indiana. The current homogenous appearance of Indiana's central region is misleading because underneath the surface lies a blending of bedrock and glacial drift that indicates its volatile glacial past.

The Kansan Age glaciation was the first to impact Indiana and dates from approximately 350,000 to 400,000 years ago (Melhorn 1997:18). It extended southward towards the Scottsburg Lowland. The glaciation was responsible for the formation of the Ohio River. The pre-glacial Teays River valley was the main drainage system across the country stretching from North Carolina to Illinois. The waterway was dammed in western Ohio by the encroaching glacier and forced to find alternative outlets. The drainage was diverted to what is now the Ohio River (Shurig 1970:6). The Kansan glaciation was also responsible for some of the deepest valley-cutting during the Ice Age and deposited roughly 75 to 100 feet of glacial drift (Wayne 1966:32).

Glaciations are followed by years of warming, which result in differences in fossils and soil deposits. These differences make it possible to clearly delineate various glacial episodes. The Yarmouth Age was the warming period that followed the Kansan Age and lasted for 200,000 years (Melhorn 1997:18); it was later followed by the second glacial episode, the Illinoian Age.

The Illinoian Age began 125,000 years ago (Wayne 1966:32). This is the glaciation that was responsible for delving the farthest into the Northern Hemisphere. The glacier margin fluctuated three times from its origin in the Lake Michigan Lowland to just south of the 38th parallel (Wayne 1966:33). Each fluctuation resulted in distinct till coloration as well as types of fossils present. The warming period known as the Sanagamonian Age succeeded this glaciation and then gave way to the next major ice age known as the Wisconsin Age (Wayne 1966:34).

The most recent glaciation, the Wisconsin Age, began its encroachment upon Indiana from the northeast 70,000 years ago and produced the Trafalgar Formation (Wayne 1966:34). The glacier was approximately 1,700 feet thick in certain areas (Wayne 1966:27). A portion of Newton County is part of the Cartersburg Till Member (Figure 7), which is part of the Trafalgar Formation (Wayne 1966:26). The Trafalgar formation is primarily composed of massive calcareous conglomeritic mudstones (a compact but uncemented sandy, silty, matrix) with scattered beds of gravel, sand and silt (Wayne 1963:45).

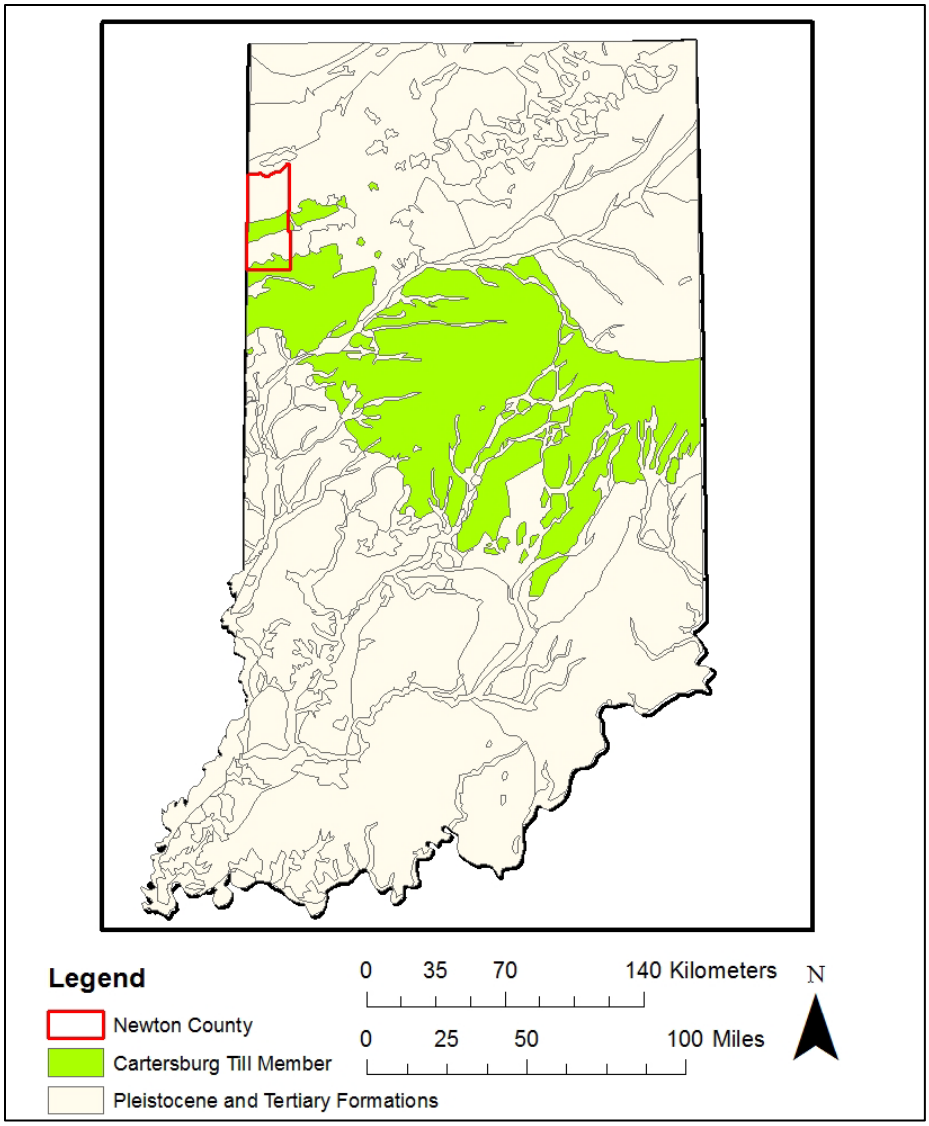


Figure 7: Location of Newton County and the Cartersburg Till Member (based on Wayne 1966:26).

Unconsolidated sediments overlie the Trafalgar Formation in some areas and were deposited extraglacially as the Atherton Formation (Wayne 1963:31, 1966:26). These sediments of gravel, sand, silt and clay were derived primarily from glacial outwash and were sorted and deposited by meltwater currents, wind action or in the quiet waters of glacial lakes (Wayne 1963:31, 1966:26). Most of the Atherton Formation sediments in the project area would belong to the lacustrine facies (Wayne 1966:26). This facies consists of stratified coarse-grained sediments which were deposited in sheets by glacial meltwater current in valley fill (Wayne 1963:32). The remaining sections within Newton County are a part of outwash and dune facies. This includes some of the Martinsville Formation of which only part belongs to the Atherton Formation (Wayne 1966:26).

Physiography

Newton County is within the general physiographic units known as the Northern Moraine and Lake Region and the Tipton Till Plain (Schneider 1966). Gray (2000; Gray and Sowder 2002) places the county within the Kankakee Drainageways (northern half) and the Iroquois Till Plains (southern half) (Figure 8). The portion of Newton County that falls within the Northern Moraine and Lake area is characterized as being part of the Kankakee Outwash and Lacustrine Plain. This is an area that is predominantly underlain by sand deposited as outwash during the retreat of the last glaciers which resulted in a predominance of poorly drained sediments in lowlands around the Iroquois, Tippecanoe, and Kankakee Rivers (Schneider 1966:52). The Tipton Till Plain is an area of low relief with extensive areas of ice-disintegration features. It covers a small portion of the southern part of Newton County (Schneider 1966:41). These poorly drained soils, combined with the low lying topography, contributed to the formation of the Beaver Lake and other wetlands which covered much of the county until its draining, in the mid-19th thru early 20th, centuries for agricultural purposes (Smallwood and Osterholz 1990:1).

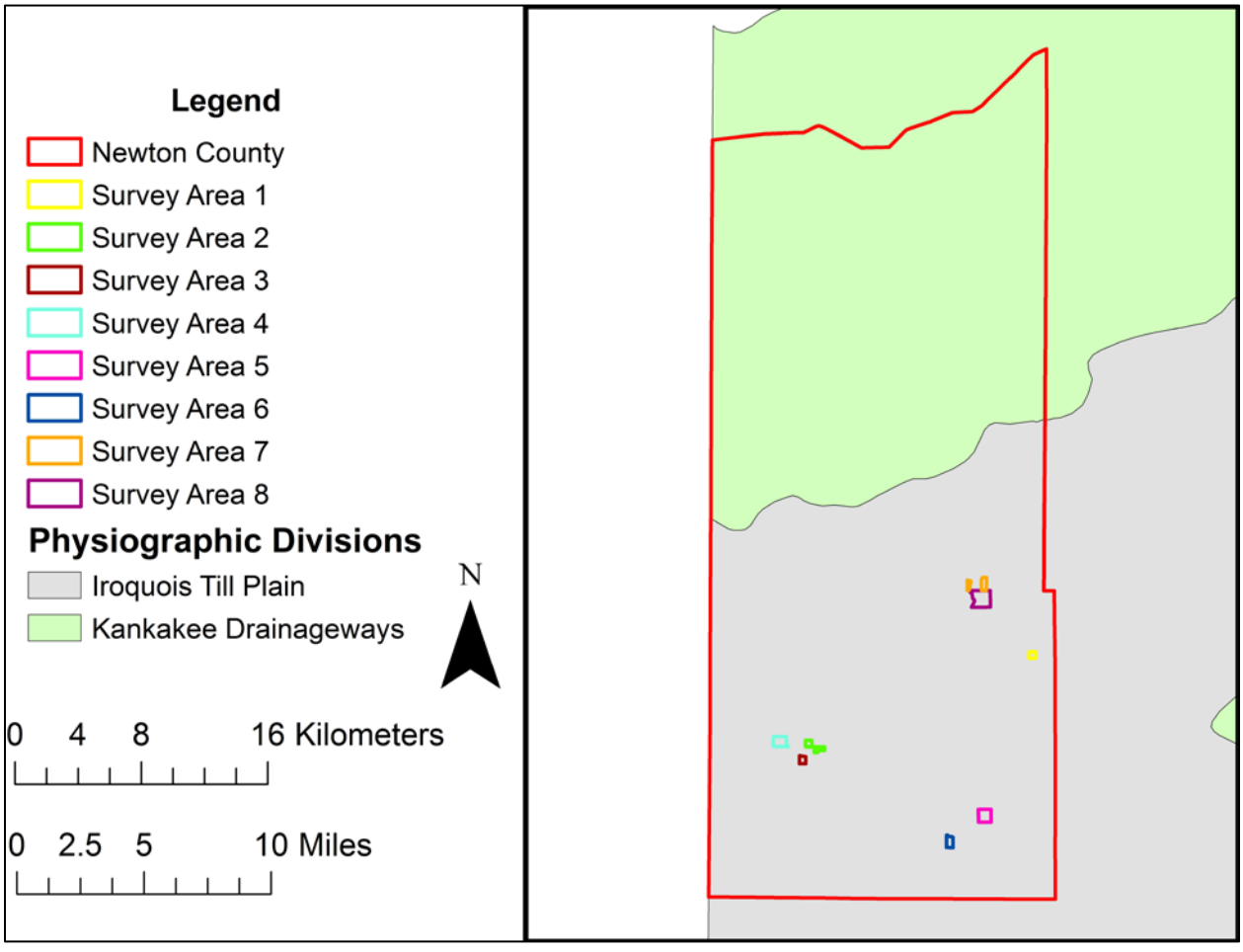


Figure 8: Physiographic divisions and survey areas in Newton County

Soils

The majority of soils found in Newton County are a product of either glacial or fluvial parent materials. Glacial till sediments typically have clayey to silty textures and contain particles of sand and gravel sizes with sharp corners not eroded by water. Glacial-fluvial, or outwash, deposits range from silty to gravelly textures depending on the water source that carries them. The more recent fluvial deposits found on flood plains and river terraces are dominated by loamy textures. Lacustrine sediments are deposited from glacial meltwater tend to have clayey textures (Barnes and Osterholz 1998).

There are 12 soil associations mapped within Newton County (Table 1). Soils with landforms of floodplains (Craigmile-Prochaska and Sawabash-Comfrey, consistent with Craigmille-Suman-Prochaska and Sawmill-Lawson-Genesee in STATSGO) (United States Department of Agriculture, Natural Resource Conservation Service 2002) represent a small percentage of the county. Associations with landforms of outwash plains (Oakville-Morocco-Brems and Selma-Darroch-Foresman, consistent with Coloma-Spinks-Oshtemo and Swygert-Bryce-Chatsworth in STATSGO) also account for a small percentage of Newton County. Associations that form lake plains and, or have some combination with outwash plains or lake bed landforms (Montgomery-Strole-Simonin, Toto-Ackerman-Adrian, Granby-Maumee-Zadog and Conrad-Zaborosky-Kentland consistent with Swygert-Bryce-Chatsworth, Houghton-Adrian-Carlisle, Granby-Zadog-Maumee, Kentland-Conrad-Zaborosky in STATSGO) account for the second largest percentage in Newton County. The largest percentage of soil associations in Newton County form moraine landforms, ground or recessional, (Swygert-Bryce-Swygert, Barry-Sumava-Octagon, Selma, Till Substratum-Barce-Gilboa, Selma, Till Substratum-Darroch, Till Substratum-Foresman, till Substratum consistent with Montgomery-Strole-Lenawee, Barry-Sumava-Octagon, Saybrook-Drummer-Parr, Saybrook-Drummer-Parr in STATSGO) (Barnes and Osterholz 1998:9-16). In 2002 the USDA updated revised their soil associations when producing STATSGO (USDA/NRCS 2002). Those associations are shown in Figure 9.

Table 1: Soil Associations in Newton County (Barnes and Osterholz 1998)

Association	Description	Landforms	% of County
Barry-Sumava-Octagon	Very deep, nearly level to moderately sloping, poorly drained to well drained, moderately coarse textured soils that formed in glacial till or in loamy outwash over glacial till	Moraines	17%
Conrad-Zaborosky-Kentland	Very deep, nearly level or gently sloping, very poorly drained or somewhat poorly drained, coarse textured soils that formed in sandy sediments or in organic material over sandy sediment	On lake beds or lake plains	4%
Craigmile-Prochaska	Very deep, nearly level, very poorly drained, medium and coarse textured soils that formed in loamy alluvium over sandy alluvium.	Floodplains	2%
Granby-Maumee-Zadog	Very deep, nearly level, very poorly drained, coarse textured soils that formed in sandy sediments	Outwash plains or lake plains	22%
Montgomery-Strole-Simonin	Very deep, nearly level to strongly sloping, very poorly drained to moderately well drained, moderate fine or coarse textured soils that formed in lacustrine sediments or in sandy and loamy outwash over lacustrine sediments	Lake plains	5%
Oakville-Morocco-Brems	Very deep, strongly sloping nearly level, well drained to somewhat poorly drained, coarse textured soils that formed in sandy sediments	Outwash plain	17%
Sawabash-Comfrey	Very deep, nearly level, very poorly drained, moderately fine or medium textured soils that formed in silty and loamy alluvium or in loamy alluvium.	Floodplains	1%
Toto-Ackerman-Adrian	Very deep, nearly level, very poorly drained soils that formed in organic material over marl, coprogenous earth, and sandy sediments in organic material over coprogenous earth and sandy sediments, or in organic deposits over sandy sediments	Lake plains and outwash plains	2%
Selma-Darroch-Foresman	Very deep, nearly level or gently sloping, poorly drained to moderately well drained, medium textured soils that formed in loamy outwash or in silty and loamy sediments	Outwash plains	9%
Selma, Till Substratum-Barce-Gilboa	Very deep, nearly level or gently sloping, poorly drained to moderately well drained, moderately fine or medium textured soils that formed in loamy outwash over glacial till or in silty and loamy outwash over glacial till	Ground Moraines	5%
Selma, Till Substratum-Darroch, Till Substratum-Foresman, Till Substratum	Very deep, nearly level or gently sloping, poorly drained to moderately well drained, moderately fine or medium textured soils that formed in loamy outwash over glacial till	Ground moraines	14%
Swygert-Bryce-Swygert	Very deep, nearly level to strongly sloping, poorly drained to moderately well drained, medium or moderately fine textured soils that formed in glacial till	Recessional moraines	2%

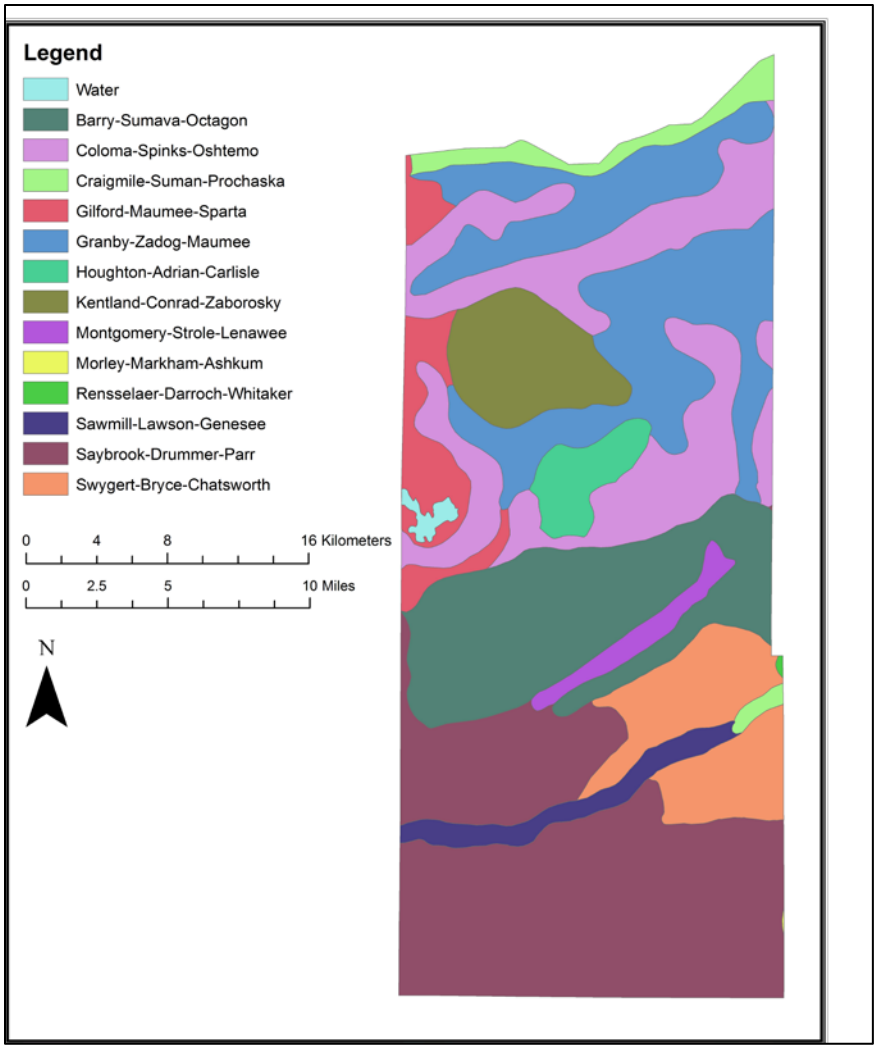


Figure 9: Soil Associations in Newton County (STATSGO, USDA/NRCS 2002).

Water Resources

Precipitation is the primary source of surface water for Newton County (Hale 1966:92). Eight to 20 percent of precipitation becomes surface water as it collects in rivers, streams, lakes, and reservoirs (Bechert and Heckard 1966:100). The Kankakee River, which lies in northwestern Indiana and northeastern Illinois is the major water source running through Newton County (Heistand 1951:9-10). However, there is also the Iroquois River and Beaver Creek, both tributaries of the Kankakee River, and also many other smaller streams and creeks. The Kankakee River has a shallow gradient of only five inches per mile making the river very sluggish and prone to flooding. Historically the Kankakee River had shallow standing water covering about five miles on either side of the banks for about nine months out of the year prior to its draining (Meyer 1935). The glacial outwash of the Kankakee is described as a “nearly level relief with low meandering sand dunes or ridge that occur irregularly” (Barnes and Osterholz

1998:3). Aeolian processes also affected the sandy sediments along the Kankakee River. Sand was blown out of the outwash deposits resulting in the formation of numerous small dunes, called islands, even though they are no higher than five feet above the alluvial plain, flanking the river in the Kankakee lowlands (Wayne and Zumberge 1983).

The Iroquois River, which this survey focused on, is slower and smaller tributary to the Kankakee River. The Iroquois River flows for 94 miles through farmland in neighboring Jasper County and in Newton County (Heistand 1951:8). Both the Kankakee and the Iroquois Rivers ultimately flow westward into Illinois. Newton County has only one major lake, J.C. Murphy Lake, as well as some smaller ponds, and all are manmade (Barnes and Osterholz 1998:4).

The flow or "discharge" of rivers fluctuates greatly throughout seasons and over years. The maximum discharge is experienced during the late winter and early spring. Melt water from snow and increased precipitation at this time increases the discharge so much that at times flooding becomes a serious concern. Minimum discharge occurs during the summer and fall due to the effects of evaporation and transpiration by plant life. Roughly two-thirds of precipitation is lost due to this process. In contrast, maximum use of water also occurs during the summer and fall resulting in occasional drought (Hale 1966:94-95). In a landscape characterized by extensive wetlands, such as that found in prehistoric Newton County, these seasonal and annual precipitation fluctuations could have drastically influenced the size and location of habitable area (see e.g., Surface-Evans et al. 2005).

The remaining eight to 16 percent of precipitation percolates through the aeration zone of soil and rock until it reaches the water table where it becomes ground water (Bechert and Heckard 1966:100). Ground water moves laterally until it reaches a lower elevation. Eventually ground water will become surface water when it reaches an outlet (Bechert and Heckard 1966:110). Water resources are extremely important to both prehistoric and historic human habitation patterns. Newton County's multiple water, and especially wetland, resources would have been valuable resources to prehistoric and historic populations.

Climate

The modern climate of Indiana is described as a humid, mesothermal-microthermal, continental climate (Newman 1966:171; see also Eichenlaub 1979 and Woods et al. 2003). This refers to Indiana's lack of average humidity less than 50 percent and cold periods of winter and hot periods of summer (Newman 1966:171). Northern Indiana is within the microthermal unit which has a cool temperature climate like those found farther north and east, whereas southern Indiana is a part of the mesothermal unit which has a warm temperature climate similar to those areas in the south and west (Newman 1966:171). Eichenlaub (1979) places this portion of the state within the Great Lakes climate region with the attendant influence of the lake on temperatures and precipitation. Further, Eichenlaub (1979:194, Figure 53) that the county is

within the *Dfb* Köppen region characterized by cold and snowy forests, with no dry season, and relatively cool summers. Newton County is characterized by a coefficient of continentality of approximately 44-45 (Eichenlaub 1979:Figure 56) which is a measure of the strong influence of Lake Michigan on local climate. Since Newton County is located in northwestern Indiana, it experiences daily and seasonal variability in climate, with very cold winters and hot and humid summers due to some of the effects of Lake Michigan (Schaal 1966:166). Without Lake Michigan, northern Indiana would be much colder during the summer months due to the moisture in the air retaining heat, but the proximity to the lake also means that surface winds in the area are higher comparatively to other areas of Indiana (Schaal 1966:169).

Average rainfall for Newton County is 37.32 inches a year while average snowfall is 28.3 inches a year (Barnes and Osterholz 1998:4-5; see also Woods et al. 2003). The mean minimum January temperature is between 18 to 20 degrees Fahrenheit while the mean maximum January temperature is between 34 to 38 degrees Fahrenheit (Schaal 1966:162). Summer temperatures vary accordingly with intense heat, the mean minimum July temperature is 62 to 64 degrees Fahrenheit and the mean maximum July temperature is between 86 to 90 degrees Fahrenheit (Schaal 1966:162; see also Eichenlaub 1979).

Southern Newton County is entirely within Level IV Ecoregion 54a (Figure 10), the Illinois/Indiana Prairies (IIP) which is part of the Central Corn Belt Plains (CCBP) Level III Ecoregion 54 (Woods et al. 2003). All of the survey areas for this project are with ecoregion 54a. The northern reaches of Newton County fall within the Level IV ecoregion 54c, the Kankakee Marsh, or 54d, the Kankakee Sand Area. Mollisols dominate the CCPB, and the IIP is mostly prairies with aquolls more abundant. The IIP gets approximately as much precipitation as the Kankakee Marsh (54c) and the Kankakee Sand Area (54c). Ecoregion 54a experiences 160-170 frost free days, up to 23 more days than the Kankakee ecoregions (Woods et al. 2003).

Minor climatic properties may be influenced by natural features within the landscapes, creating variably hospitable small scale climatic zones. These features would have affected prehistoric and historic utilization of the local environment and created small scale preferential or detrimental climactic conditions. Newman (1966:174-176) refers to these areas as “meso-climates” and states that they are mainly caused by changes in wind patterns as a result of natural landforms such as major river valleys, the shore area around large lakes, high plateau areas and springs. These meso-climates, though very difficult to describe retroactively, may have played a part in the habitation patterns among prehistoric peoples.

The modern climate of Indiana is not an accurate reflection of the climate over the last 12,000 years. As other archaeologists have noted (e.g. King 1993:236), the reconstruction of paleo-climates has been hampered by ambiguous climatic data that have been used to support conflicting interpretations. Climatic change has been documented and can be discussed in generally accepted terms.

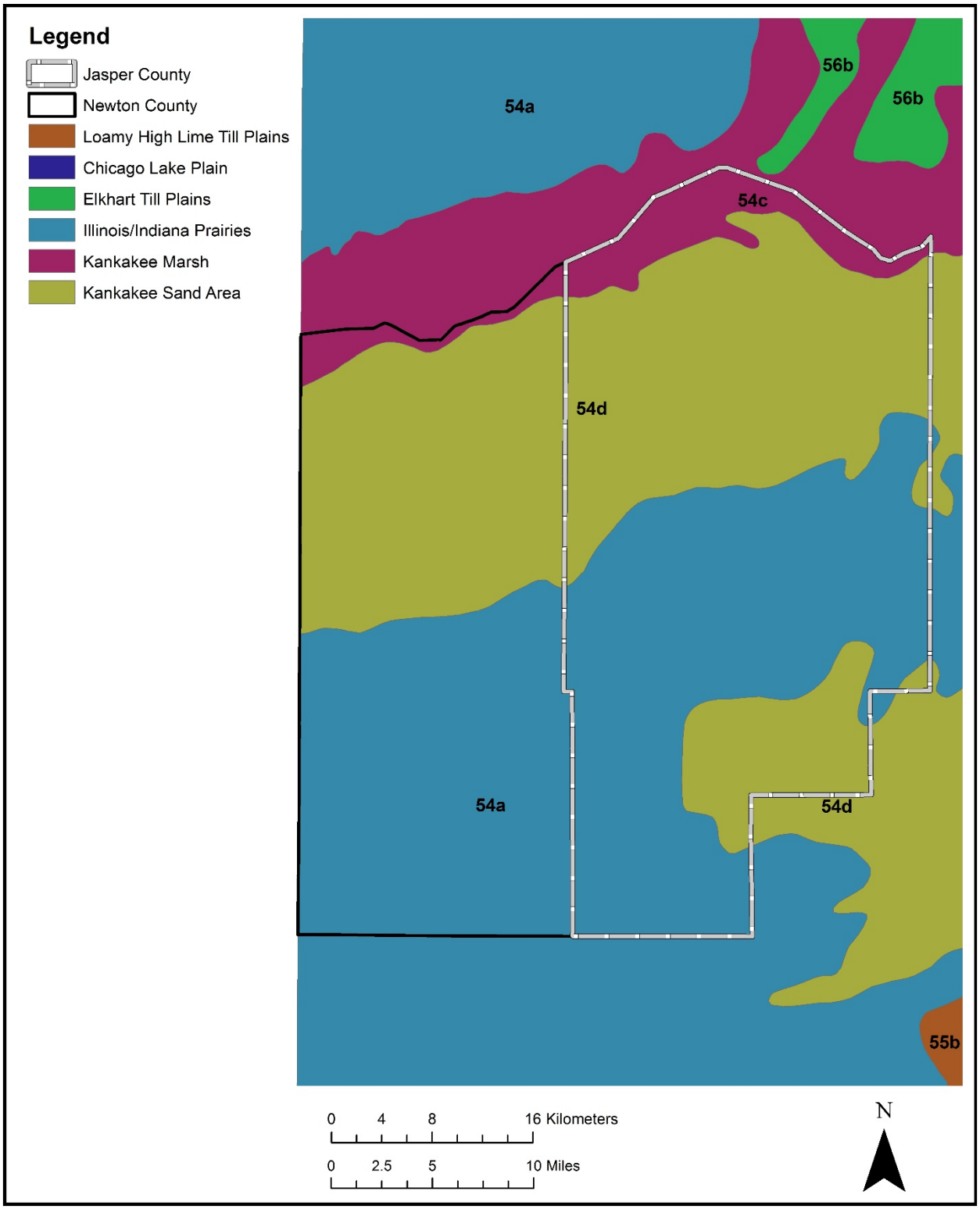


Figure 10: Level IV Ecoregions (Woods et al. 2003) for Northwest Indiana.

Biotic Communities

Flora

As the climate shifted in Indiana after the end of the Pleistocene, so did the plant species. Figure 11 presents the transformation of the vegetative sequence constructed by Shane and adapted by Don Cochran (Cochran and Buehrig 1985:9, after Shane 1976; see also Bond et al. 2001; Shane et al. 2001) to reflect the general changes that took place within the region since the retreat of the glacial ice. Shane (1976, Shane et al. 2001) discusses regional changes within the Ohio valley that have broad scale implications for the U.S. Midwest and Great Lakes regions. The trends identified were a relatively rapid and dramatic change in vegetation from open parkland to closed forest was the result of a rapid acceleration in the rate of warming (Whitehead 1997:105). Figure 11 is a regional generalization and does not cover the project area specifically. It should be emphasized that vegetation varied greatly over time and space, and the introduction and conclusion of species across Indiana produced a forest with mixed vegetation (Whitehead 1997:105). Vegetative responses have not been recorded in sediments for the Great Lakes Region (Holloway and Bryant 1985:237).

With historic documentation, more detailed descriptions of the vegetation in northern Indiana can be given. The historic forest descriptions should be representative of the deciduous vegetation occurring during the Woodland period. Newton County has been characterized as having prairies in the southern portion of the county and wetlands in the north (Taylor 2009:12). However, Petty and Jackson's (1966) study of the natural vegetation of Indiana in 1816 shows Newton County as predominantly wetlands with some pockets of oak-hickory forest and two tongues of dry prairie associations (Figure 12). However, within Indiana oak-hickory forests are found to be in balance and intertwined with beech-maple and western mesophtic forests (Petty and Jackson 1966:285-286). These forest communities use the various topographic and edaphic variations throughout Indiana to thrive in their locations (Petty and Jackson 1966:286). During the time of European immigration to the Americas, oak-hickory was slowly being replaced by other competing associations like beech and maple. However, white oak was highly valued to the new settlers, which allowed oak-hickory to survive (Petty and Jackson 1966:287). All of the survey areas for the current project are within the southern wetlands area framed by the two tongues of dry prairie on either side of the Iroquois River (see Figure 12).

The understories (layer of vegetation beneath the canopy) within oak-hickory forests are generally less developed in comparison to other forest communities. However, maple and beech reproduction forests have shown that within their understory can be found mature oaks (Petty and Jackson 1966:283). Along with maple reproduction it is found that within oak-hickory understories, only one or two other species will be found. Species like hop hornbeam, blue beech, service berry or dogwood are found within the understory. Shrub species commonly found within oak-hickory forest are blueberry, huckleberry, snowberry and nannyberry. Herbs

within oak-hickory communities include pussy-toes, common cinquefoil, wild licorice, tick clover, blue phlox, waterleaf, bloodroot, Joe-pye-weed, woodland asters, goldenrods, wild geranium and bellwort. These herbs are most prominent during late summer and autumn (Petty and Jackson 1966:287-288).

<table>
<tr><td>A.D. 2000</td><td rowspan="2">Historic</td><td rowspan="8">Deciduous Forest</td></tr>
<tr><td rowspan="2">A.D. 1000</td></tr>
<tr><td rowspan="3">Late Woodland</td></tr>
<tr><td rowspan="2">0</td></tr>
<tr><td>Middle Woodland</td></tr>
<tr><td>1000 B.C.</td><td>Early Woodland</td></tr>
<tr><td>2000 B.C.</td><td rowspan="2">Late Archaic</td></tr>
<tr><td>3000 B.C.</td></tr>
<tr><td>4000 B.C.</td><td rowspan="3">Middle Archaic</td><td rowspan="2">Prairies and Open Vegetation</td></tr>
<tr><td>5000 B.C.</td></tr>
<tr><td>6000 B.C.</td><td rowspan="3">Deciduous Forest</td></tr>
<tr><td>7000 B.C.</td><td rowspan="2">Early Archaic / Late Paleoindian</td></tr>
<tr><td>8000 B.C.</td></tr>
<tr><td>9000 B.C.</td><td rowspan="2">Pine Maximum</td></tr>
<tr><td>10000 B.C.</td><td rowspan="6">Early Paleoindian</td><td rowspan="2">Conifer-Deciduous Woodland</td></tr>
<tr><td>11000 B.C.</td></tr>
<tr><td>12000 B.C.</td><td>Boreal Forest</td></tr>
<tr><td rowspan="2">13000 B.C.</td><td>Park Tundra</td></tr>
<tr><td>Tundra or Open Areas</td></tr>
<tr><td>14000 B.C.</td><td>Periglacial Zone</td></tr>
<tr><td>15000 B.C.</td><td>Wisconsin Ice</td></tr>
</table>

Figure 11: Vegetation Sequence of Central Indiana (Cochran and Buehrig 1985:9, after Shane 1976).

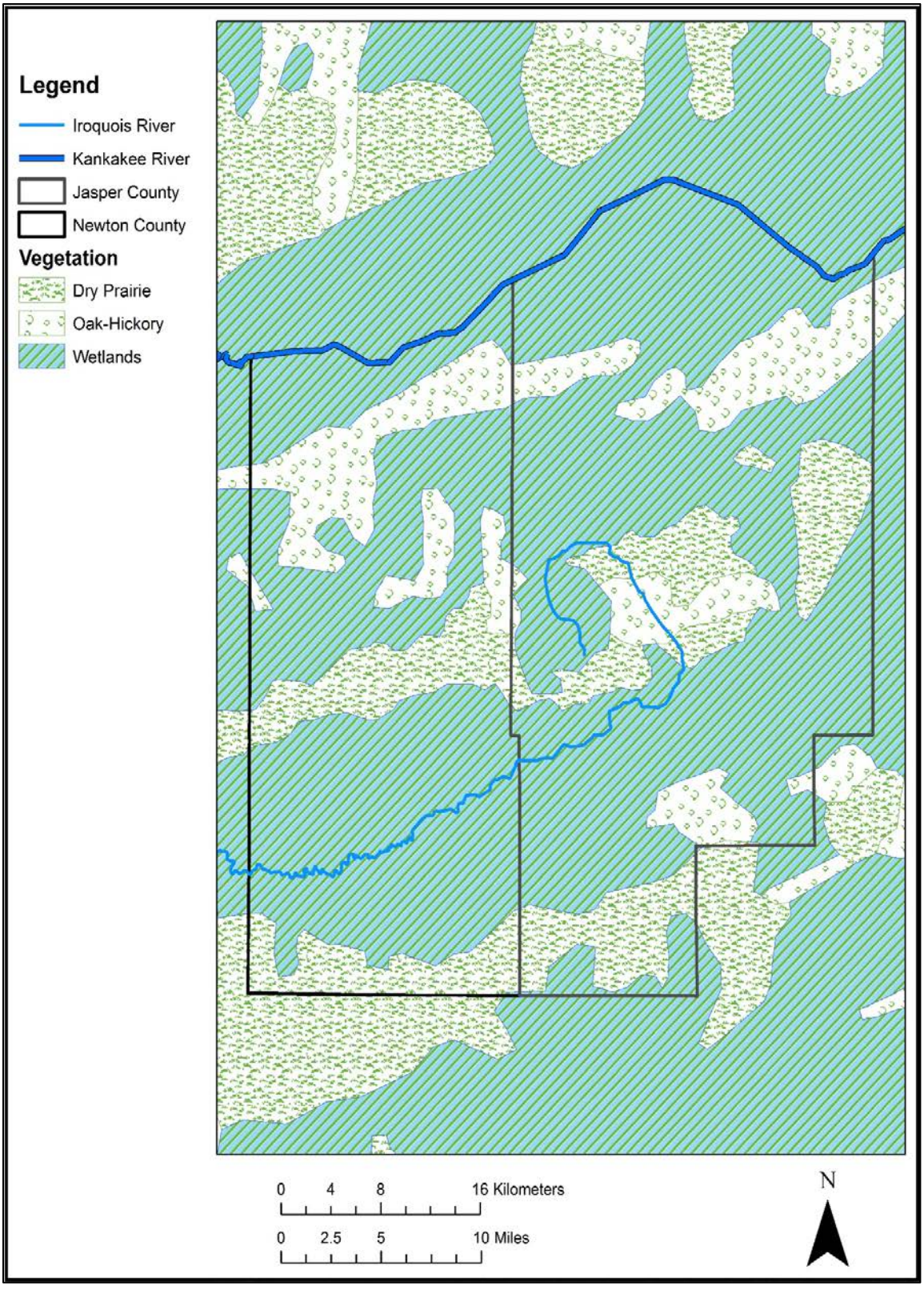


Figure 12: Pre-Euro-American Settlement Vegetation after Petty and Jackson (1966).

The Prairie Peninsula, historically found in Northwest Indiana, once covered 13 percent of the Indiana landscape. In more recent times prairie lands of Indiana are predominantly found only in designated low maintenance areas such as settlement era cemeteries, and along highways and railroads. While prairie lands often appear to be simple grasslands, these lands have a complex system of both plants and animals within them. The development of prairies played a large part in the fertility of both Indiana and the United States as a whole. The species of plants that constituted the prairies in this area were a mix of both northern and southern species. These two groups grow and mature at different points throughout the year, allowing prairies to be successful vegetative communities in most seasons as well as to propagate fertile soils (Petty and Jackson 1966:288-289). There were two areas of dry prairie within Newton County, both in the vicinity of our survey areas (see Figure 12). The intermingling of dry prairie and wetland may have fluctuated in the deeper past.

In Indiana, wetland vegetative communities are advantageous for humans because of the wildlife and the plant life they house (Meyers 1997:69). Wetlands in Indiana display the highest diversity of life, including endangered species, of all local habitats. Wetlands are characterized as low lying, often poorly drained areas found between land and water. This includes swamps, bogs, fens, marshes, seep springs, sloughs, bottomland, potholes, wet meadows or prairies, and most areas that are found in the margins of lakes, reservoirs, rivers and streams. Wetlands offer ways for humans to control water based resources and indeed the resource of water itself. Wetland communities are decreasing within Indiana, but they can still be found within places like Newton County (Meyers 1997:67). Prehistorically, wetlands would have been economically important, and potentially attracted people from atypical distances seasonally. The fluctuations of surface moisture seasonally and through the centuries would have exerted a great influence on prehistoric activity distributions.

Fauna

The animals living in Indiana would have changed from the end of the Pleistocene through Holocene times. Various Pleistocene age fauna have been found in Indiana. Early twentieth century accounts list bison, giant beaver, caribou, Virginia deer, dire wolf, wapiti, horse, mammoth, mastodon, musk-ox, peccary, sloth and perhaps moose (Lyon 1936; Moodie 1929). More recent investigations have expanded this list to include moose, caribou, black bear, giant short-face bear, giant tortoise, white-tailed deer, Canada goose, armadillo, jaguar, sabertooth tiger and camel (Richards and Whitaker 1997:156).

The faunal arrangement greatly changed around 10,000 to 11,000 years ago with the extinction of many of the larger mammalian species. A rapidly changing climate combined with the introduction of humans resulted in a reorganization of biotic communities (Richards and Whitaker 1997:151). In 1816, an estimated 66 species of mammals were present in Indiana (Mumford 1966:475). Some of the common mammals found in Indiana include opossum, eastern

cottontail, eastern chipmunk, white-tailed deer, beaver, deer mouse, white-footed mouse, meadow vole, pine vole, muskrat, southern bog lemming, Norway rat, coyote, red fox, gray fox, raccoon, long-tailed weasel, various species of squirrels, mice and shrews. Twelve species are listed as exterminated from Indiana and include bison, wapiti, porcupine, gray wolf, red wolf, black bear, fisher, eastern spotted skunk, wolverine, river otter, mountain lion and lynx (Mumford 1966:475).

Historic sources also report a large variety of other fauna in Indiana. Webster (1966:455-473) identifies 366 species of birds. A total of 177 fish have been identified in the state (Gammon and Gerking 1966:401-425). Approximately 200 species of mollusks and 400 species of crustaceans occurred in Indiana waters. Approximately 82 species of amphibians and snakes have been identified (Milton 1966:426-451). The species can be subdivided into 19 species of salamanders, two species of toads, 11 species of frogs, six types of lizards, some 30 types of snakes, and 14 turtle varieties (Milton 1966:426-451).

Summary

As the ecological and natural setting of the project area changed and evolved over the last several thousand years, human settlement would also have changed. Settlement and use of resources within the project area would have been influenced by potential plant and animal resources and, conversely, may have influenced changes in flora and fauna (Delcourt and Delcourt 1991:87-89). The diversity of habitats that existed in the project area would have attracted prehistoric populations for the wide variety of natural resources available as food, water sources, and raw materials in the production of tools, clothing, adornment and shelter.

Archaeological Background

In this section, the archaeological background of Newton County is reviewed. The background information was analyzed for data relevant to an understanding of archeological resources expected to be found during this investigation both in terms of the types and densities of archaeological data, as well as the history of the landscape. A records review was conducted at DHPA by Kevin C. Nolan on May 30, 2014. The results of this review are presented in Table 2, which provides the references for previous surveys as well as the number of surveys conducted and those successful in locating sites. Following Swihart and Nolan's (2013, 2014) procedure, the results are segregated by civil townships, which are shown in Figure 13. The Positive column indicates the number of surveys that encountered artifacts and reported any sites. The S/P column is a ratio of the number of surveys conducted by the number of surveys that were positive. The P/S column is a ratio of the number of positive surveys to total surveys. These ratios give an approximate index of the average density of the archaeological record in the county and in each civil township. The results show that sites are encountered in about one in every 3.33 surveys in Newton County with an average positive density of 0.29. Prior to the

current survey, 178 sites (Volume 2, Appendix A) had been recorded in Newton County. Summaries of site components and projectile points recovered from the area are presented in Table 3, Table 4 and Table 5.

The information in Table 2 shows that the townships with the least amount of surveys as well as the least amount of sites are located in the more central portions of the county. This is to be expected as this area is characterized by lower modern population and landscape development outside of farmland, which could account for the lower number of mandatory surveys. However, Beaver Township has the highest density of positives with 56 percent of surveys (n=5) encountering sites. With such low numbers of surveys in these areas (especially Jackson Township) it is very difficult to say how dense the archaeological record really is in the central portion of the county.

Conversely the townships with the greatest amount of conducted surveys tend to be those in the northeastern most area and in the southernmost portion of the county. The greatest frequency of surveys are in Lincoln, Jefferson, and Grant Townships. This reflects the expansion of Roselawn (on the border of Newton and Jasper Counties) in Lincoln Township and expansion of Kentland and Goodland in Jefferson and Grant Townships, respectively.

With a ratio of one positive survey for every 3.33 CRM projects (Table 2), Newton County exhibits moderately low relative abundance of archaeological resources compared to an S/P ratio of 2.8, 2.7, and 1.94 for Jasper, Dearborn, and Hamilton Counties, respectively. This is accounting for the relatively low amount of archaeological investigations that have taken place in Newton County compared to counties like Hamilton County in central Indiana, Dearborn in southern Indiana, and Montgomery in west central Indiana (James and Cochran 1985; Macleod et al. 2015; Murray et al. 2011; Swihart and Nolan 2013:Table 3, 2014:Table 2). The lower levels of development and construction that has taken place within Newton County could account for the lower frequency of state and federal surveys conducted. The first federally mandated survey within Newton County did not take place until 1976 in Lincoln Township, but there had been known sites documented within the county in the 1950s and earlier (DeRegnaucourt 1976; Heistand 1951).

Archaeological investigations in Newton County have been predominantly oriented toward surface surveys and only a small percentage of sites have been tested or excavated. A Phase II survey was conducted as part of a section 106 grant within a 390 acre area of the [redacted] in Lake County (La), immediately north of Newton County, took place in 2004 (Surface-Evans et al. 2005). Subsurface testing was done on five sites found during a previous Phase I survey conducted (Kullen and Greby 2003). This project included 13 hand excavation units, mechanical excavation of 34 trenches, geophysical survey of three 20m x 20m grids, and pedestrian survey of the western portion of site 12-La-91 (Surface-Evans et al. 2005:258). In this

excavation, Surface-Evans found significant cultural deposits in all five sites and recommended either avoidance or Phase III mitigation. Contained in the cultural deposits were lithic artifacts such as flakes, bifaces, and groundstone tools, and also prehistoric ceramics. These artifact classes included the Early to Late Archaic, Middle Woodland, Late Woodland, and Upper Mississippian cultural periods (Surface-Evans et al. 2005:261-263). The major goal of their project was to increase the understanding of the archaeology of northwestern Indiana. The project was located in Northwestern Indiana, notably lacking in archaeological data compared to other regions of the state and much of the archaeology is done under salvage conditions, so the data quality is very poor (Surface-Evans et al. 2005:263). This observation of the dearth of archaeological information in Lake County also applies to Newton County; especially around the marsh, as both counties have seen very little development and our understanding of the nature and trajectory of prehistoric use of these areas is woefully inadequate.

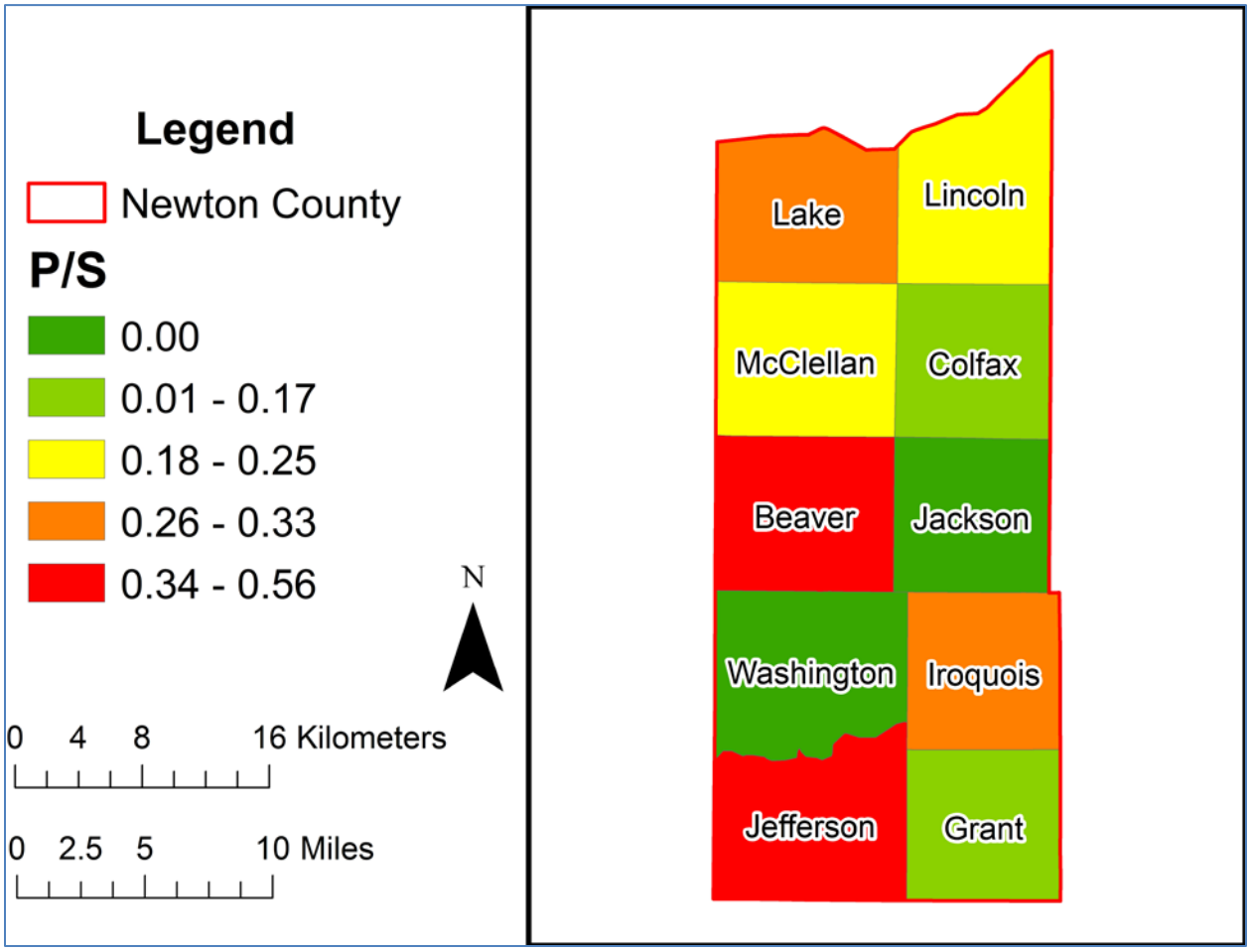


Figure 13: Civil Township locations in Newton County (USGS 7.5' Washington, Indiana Quadrangle).

Table 2: Summary of Previous Surveys in Newton County

Civil Township	# of Surveys	Positive	S/P	P/S	References
Beaver	9	5	1.8	0.56	(Brammer 1995; Conover 1985a; Coon 2012a; King 2007; McAlpine 2004; Westermeier 1997; Zoll and King 2007; Zunker and Nagle 2001)
Colfax	7	1	7.0	0.14	(Adderly 2002; Keene 2010; Pace 1987; Parsell 2012; Stillwell 2001, 2004, 2010a)
Grant	12	2	6.0	0.17	(Beard 1991; Conover 1985b; Cree 1991a; Holycross 2001; King 2010; Stafford 1988; Stillwell 2002, 2005, 2010b; Wappenstein 1999; Zoll 2010; Zunker and Nagle 2002)
Iroquois	9	3	3.0	0.33	(Burkett 1993; Cochran and Cox 1977; Conover 1983; Coon 2008; Helmkamp and Kanne 2001; Holycross 1997; Hutchinson 1986; King and Zoll 2009; Stillwell 2000)
Jackson	0	0	0	0	
Jefferson	11	6	1.8	0.55	(Adderly 1996; Cochran 2006; Conover 1986a, 1986b; Coon 2012b; DeRegaucourt 1982; Helmkamp and Coon 1999; Miller 2006; Pace 1984; Rourke-Jordan 1979; Wepler 1978)
Lake	9	3	3.0	0.33	(Bellis 1979; Coon 2010; Donaldson 2013; Evans 1990; King 2009; Lumbis 1984; Moffatt 2010; Stillwell 2006; Waters 1999)
Lincoln	20	4	5.0	0.20	(Angst 1998; Beard 1994; Bennett 2000; Black 2005; Black and Miller 2003; Conover 1986c; DeRegnaucourt 1976; Fabyan 1979, 1982; Greenhouse et al. 2000, 2001a; Greenlee 2007; Helmkamp 2000; McCord 2004; Rosenberg 2004; Stafford 1987; Stillwell 1999, 2006; Tomak 1984, West 1988)
McClellan	8	2	4.0	0.25	(Anslinger 1993; Beazley and Bazzill 2013; Cantin 1995; Conover 1985a; Greenhouse et al. 2001b; Keene and Hayes 2005; Moffatt 2009; Mangold 2003)
Washington	2	0	0.0	0.00	(Greenhouse et al. 2001c; Stillwell 2013)
Unknown	3	1	3.0	0.33	(Fabyan ca. 1976-1979; White et al. 2007)
Total	**90**	**27**	**3.33**	**0.30**	
Average	**8.18**	**2.45**	**3.33**	**0.29**	

Table 3: Site Components Recorded Within Newton County (DHPA 2014, Table 2)
***bold period headings include all sub-periods**

Component	No.	Number of Multicomponent sites included in total
Unidentified Prehistoric	**115**	**27 Multicomponent**
Paleoindian	**0**	
Archaic	**7**	**6 Multicomponent**
Early Archaic	2	2 Multicomponent
Middle Archaic	1	1 Multicomponent
Late Archaic	3	1 Multicomponent
Unknown Archaic	1	1 Multicomponent
Woodland	**43**	**32 Multicomponent**
Early Woodland	4	4 Multicomponent
Middle Woodland	4	4 Multicomponent
Late Woodland/Mississippian	12	6 Multicomponent
Unknown Woodland	23	18 Multicomponent
Mississippian	**2**	
Protohistoric/Contact	**5**	**2 Multicomponent**
Historic	**18**	**9 Multicomponent**
Unknown	**25**	

Table 4: Previously Documented Points Within Newton County (Prior to Survey)

Cultural Period	Projectile Point Types
Paleoindian	
Early Archaic	Palmer, Charleston Corner Notched, Rice Lobed, MacCorkle Stemmed, Kirk, Kanawha Stemmed, St. Albans Side Notched, Thebes
Early-Middle Archaic	Graham Cave side-notched
Middle- Late Archaic	Raddatz, Raddatz side-notched
Late Archaic	Matanzas, Table Rock Stemmed, Riverton, Merom cluster, Brewerton eared-notched, Matanzas side notched
Terminal Late Archaic	Genesee cluster
Early Woodland	Adena stemmed, Motley
Middle Woodland	Affinis Snyder
Late Woodland/ Late Prehistoric	Madison, Unclassified Side Notched, Unclassified Corner Notched, Unclassified Flared Stem

Table 5: Site Types Recorded Within Newton County
(Data from SHAARD, CRM and research reports prior to survey)

Prehistoric Types	No.	Historic Types	No.
Burial	3	Agricultural Field	5
Lithic Scatter	119	Agricultural Outbuilding	1
Ceramics	1	Cabin	3
Habitation	1	Historic Scatter	2
Camp	1	Farmstead	1
Mound	1	Wigwam	3
Prehistoric Scatter	1		
Village	1		
Isolated Find	5		
Unknown	6		

A Phase Ia investigation of 505 acres of land was conducted by Archaeological Research, Inc. in 2005 within McClellan Township. Within the project areas were previously recorded sites; however, this investigation did not discover any new sites (Keene and Hayes 2005). A Phase Ia investigation of 90 acres located in Lincoln Township was conducted in 1982 with no sites discovered (Fabyan 1982). In 2006, around 60 acres was surveyed for the [redacted] Township. This survey was carried out by Archaeological Resources Management Service of Ball State University. The results of this survey were two previously undocumented sites. These site contained lithic materials consisting of two chert flakes and no FCR (Cochran 2006). In 2003, [redacted] in [redacted] townships was surveyed by William Mangold of the Indiana Division of Historic Preservation and Archaeology. Nine new sites were documented during this investigation. These sites contained ceramic, lithic and faunal materials (Mangold 2003). All other surveys and investigation that have been conducted within Newton County were generally smaller and have documented little to no cultural materials. The amount of material culture collected does not necessarily reflect a dearth of sites. Since sites can consist of isolated finds, there can exist limited cultural materials, but a moderate abundance of sites, which appears to be the case for Newton County.

Culture History

In Newton County, sites and site components indicate that Native Americans inhabited the region from the Early Archaic period through the Historic period. Given the above described environmental background we can expect highly variable density of artifacts over space due to the interrupted distribution of habitable areas interspersed with wetlands, and a variable distribution through time as moisture levels fluctuated during the Holocene.

The majority of sites documented in Newton County are of unknown cultural affiliations. Of the known periods of occupation, the most frequently identified has been Unidentified Woodland (n=23), followed by the Historic (n=18), and Late Woodland (n=12) (Division of Historic Preservation and Archaeology 2014). The prevalence of historic sites is to be expected as historic occupations are typically display better preservation and a larger footprint than most prehistoric sites. The most dominant prehistoric sites being of Unidentified Woodland and Late Woodland cultural affiliation is distinct from neighboring counties (e.g., Macleod et al. 2015); however, this may not be representative of the true archaeological record due to low numbers of observations and limited extent of investigation. The absence of documented sites in SHAARD, and the low number of points recorded by Dorwin (1966:Figure 1) dating to the Paleoindian period is also consistent with the low frequency of these sites within the Midwest region (Shott 2004:208).

Paleoindian cultures entered Indiana around (10,000-8,000 B.C.), with the recession of the Wisconsin glaciers (Jones and Johnson 2008:2; Smith et al. 2009:21; Swartz 1981:4). Paleoindian sites generally occur in small surface scatters due to the fact that most these groups were small family bands following herds and hunting large game, such as Pleistocene mega fauna, although also likely subsisting on smaller game and forage (Grayson and Meltzer 2003:588; Waguespack and Surovell:348). Artifacts from this time include fluted Clovis points, un-fluted Agate Basin, Hi-Lo, Holcombe, Plainview and Dalton points (Justice 2006). There are no previously documented Paleoindian sites in the SHAARD database within Newton County (Division of Historic Preservation and Archaeology 2014), but Dorwin (1966) reports two projectile points of unknown type from private collections.

In the Early Archaic (ca. 8,000-6,000 B.C.) the warming climate caused changes in the ecology forcing local inhabitants to adapt their livelihood to the changes in the environment. The changing climate caused changes in the flora and fauna of the region (Shane 1976; Shane et al. 2001; Smith 1986:71). This offered more varieties of plant life and brought about the last extinctions of mega fauna which had begun to die off during the Paleoindian period (Grayson and Meltzer 2003:588). Technological changes in tools and techniques occurred during this time including new hafting techniques and ground stone tools (Smith 1986:72). Two Early Archaic sites have been found in Newton County (12-N-129 and 153) (Division of Historic Preservation and Archaeology 2014).

During the Middle Archaic (ca. 6,000-3,000 B.C.) climate continued to become increasingly warmer and drier associated with the Hypisthermal or Holocene Climatic Optimum (e.g., Robertson 2011:183), bringing more variety and stability for food resources. Stone tools became more diversified in this era and side notched points appear along with ground stone tools (Stafford and Cantin 2009:299). One Middle Archaic site has been documented in Newton County (12-N-129), a situation mirrored in other data-deficient counties (see Miller et al. 2012) (Division of Historic Preservation and Archaeology 2014).

During the Late Archaic (ca. 3,000-1,000 B.C.) the climate stabilized and the environment stayed deciduous forest. Late Archaic sites are very widely found and are generally multicomponent (Miller 1941:60; Smith et al. 2009:22). The exact nature of the Late Archaic sites is unclear, but seasonal occupation is assumed. Some cultivation of native plants and indications of trade routes occur. Pestles, axes, adzes, celts, bannerstones, gorgets and other ground stone artifacts are predominant in this period (Miller 1941:58; Smith and Yarnell 2009:22). Matanzas points make up the majority of Late Archaic points found in assemblages in Indiana (Stafford and Cantin 2009:305). Burials of the Late Archaic period in Indiana are the most represented of all archaic subdivisions. Grave items during this time were typically found to be segregated based on age and sex, although grave goods are typically not found with infant burials (Stafford and Cantin 2009:308). Two Late Archaic sites have been recorded in Newton County (12-N-37 and 152) (Division of Historic Preservation and Archaeology 2014).

The Terminal Late Archaic (ca. 1500-700 B.C) is characterized by the relative decrease in hunting and gathering practices, an increase in horticultural dependence and the inception of pottery production. Terminal Late Archaic Sites in Indiana are often from what is called the Riverton culture, though no Riverton culture sites have been confirmed in Newton County. This period is known for barbed points (Justice 1987) and for being the transitional period into the Early Woodland era. During this transitional time people were often found to be living on rivers and other major water sources. The Terminal Late Archaic saw turmoil in the region and evidence from this period shows Terminal Late Archaic era peoples practiced both ceremonial rituals and mortuary practices (Jones and Johnson 2008:7; Mensforth 2001:123; Pedde and Prufer 2001).

The Woodland period has been the most commonly recorded cultural affiliation within Newton County. Forty-three out of the 178 sites are from the Woodland period. The Early Woodland period (ca. 1,000-200 B.C.) is when pottery was introduced in North America (Montet-White 1968:5). Hunting, gathering and some horticulture continued during this period (Black 1936:298-299). The Adena culture is the most prominent cultural phenomena during this period and encompassed a region including Indiana, Kentucky, and Ohio. As this period saw the inception of ceramics, pottery can be one of the most indicative features of Early Woodland cultures (Black 1936:287-189). Many Adena sites also include burial mounds as evidenced by the presence of log tombs in mounds, such as the Nowlin Mound in southeastern Indiana, at characteristically Adena sites (Black 1936:297; Ruby 1994). Four Early Woodland sites have been documented within Newton County (12-N-2, 101, 108, and 215) (Division of Historic Preservation and Archaeology 2014).

Middle Woodland period subsistence and settlement patterns (ca. 200 B.C.-600 A.D.) are roughly consistent with that of the Early Woodland within Indiana. Sites tend to be located in close proximity to a ponds, swamps, and drainage ways, and are relatively consistent in location and distribution (Montet-White 1968:18-19). Hunting, gathering, and some horticulture were the main forms of subsistence during this period (Abrams 2009; Montet-White 1968:18-19).

Horticulture during the Middle Woodland period mainly consisted of plants such as sunflower, goosefoot, and marshelder. This period saw the rise of the Hopewell culture and extensive trade networks (Mangold 2009). Maize was introduced around this time in the Midwest though predominantly as a supplemental crop as opposed to a staple. No evidence of maize has been recovered from this time in Indiana though regional neighbors have exhibited some (Hart 1999; Riley et al. 1994:496). Extensive trade networks are also identifiable through exotic artifacts and botanical remains (Mangold 2009:198). Lithics found in the Middle Woodland include Snyder's, Lowe, Chesser, and Steuben points and lamellar bladelets (Justice 1987; Montet-White 1968:179). Within Newton County, four Middle Woodland Sites have been documented (12-N-2, 101, 102, and 108) (Division of Historic Preservation and Archaeology 2014).

In the Late Woodland period (ca. 600-1200 A.D.), the first bows and arrows were most likely introduced and eventually became the dominant weapon type (Seeman 1992:44). The first true arrow points were modifications of Middle Woodland side or corner notched points such, comprising types such as Jacks Reef and Raccoon Corner Notched (see Justice 1987). Maize was introduced as a more stable dietary constituent into the Late Woodland diet along with the continued consumption of other plant materials found in the earlier Woodland periods such as maygrass, goosefoot, and knotweed (Greenlee 2002:12). Domestic crops such as maize became increasingly important to subsistence during this period especially after 800 A.D. (Hart 1999:8; Shott 1993; Swartz 1981:59). In much of Indiana the Late Woodland period is synonymous with the Albee Phase (ca 800-1300 A.D.; see Redmond and McCullough 2000:652-662). While no Albee sites have been reported in Newton County the known distribution extends into Warren County and encompasses much of the nearby Wabash River watershed (Redmond and McCullough 2000:Figure 24.13). Albee occupations have yielded distinctive ceramics and Jacks Reef, Raccoon Notched, and Triangular Cluster projectile points. Eight Late Woodland sites have been found in Newton County (12-N-97, 98, 99, 102, 108, 125, 153, and 155) (Division of Historic Preservation and Archaeology 2014).

The Late Woodland/Mississippian period (ca. 1,100 A.D.) has the same characteristics as Late Woodland but shows adaptations toward a more focused agriculture; generally towards corn, but also squash and beans. Village sites show segregated activity in villages and triangular points are most frequently evident during this period (Redmond and McCullough 2000:656). The Vincennes culture of southwestern Indiana, and Fisher and Huber cultures of the northwest can be considered indicative of post-Middle Woodland occupations, but also of Mississippian cultural affiliation (Redmond and McCullough 2000:643). Four Late Woodland/Mississippian sites have been documented in Newton County (12-N-98, 104, 118, and 224) (Division of Historic Preservation and Archaeology 2014).

The Mississippian period (ca. 1000-1650 AD) persisted up to and past European contact and was a period of change and transition with Native American groups (Munson et al. 2006:7; Faulkner 1972:13). A few of the cultures that were prominent during this period are quite well known for their societal structures and pottery. Mississippian era archaeological sites in western

and southern Indiana are commonly found with several aspects that are considered “classic” Mississippian features like platform mounds, public and ceremonial architecture and plazas, nucleated villages that were near their agricultural fields, enclosed settlements, cemeteries and societies with hierarchical social organizations (Benson et al. 2009:468-469; Redmond and McCullough 2000:648). Two sites of the Mississippian cultural affiliation have been discovered in Newton County (12-N-118 and 224) (Division of Historic Preservation and Archaeology 2014).

The Protohistoric period (post 1500 A.D.) is the transitional period as the first European settlers began to arrive in the Americas and have first contacts with the Native Americans. This period is characterized by indirect contact with Euro-Americans and the first written accounts of the area by external observers. As such these types of sites often include both Native and European-derived materials. Though often not in direct contact, material goods, in addition to knowledge of Euro-American settlers had an influence on native life. Protohistoric sites are best identified when the site is undisturbed and contains both historic and prehistoric materials. This is evidence that these two cultures were in the location at the same period in time. Three Native American groups of the Protohistoric period are documented in the areas around Newton County. The Potawatomi, Kickapoo, and Miami, groups were recorded to live in the north and northwest of the state, near Newton County (Heistand 1951:8). Three Protohistoric sites have been documented within Newton County (12-N-98, 255, and 260) (Division of Historic Preservation and Archaeology 2014).

Late in the Woodland/Mississippian period, much of Indiana was reportedly depopulated. Contact with Europeans that resulted in epidemic diseases and warfare associated with the fur trade are believed to be key factors in the abandonment of the region (Heistand 1951:8). In the early 1800’s Native Americans inhabiting Indiana began to cede their land rights and were moved, often forcefully, to reservations within the state or out west. The largest western removal took place in 1838 and moved much of the local tribes to Kansas. This pattern continued until 1840 when all commonly held reserve lands had been ceded and Indiana was open for Euro-American Settlement.

Historic

In the times before European settlers made their way to Newton County, multiple Native American groups, like the Miami, Wea, Kickapoo and Potawatomi, populated the area (Heistand 1951:8). French fur traders’ movement into these groups’ original homelands along the Great Lakes has been considered as one of the possible causes of these Native American groups moving southward into Indiana. The Kickapoo, Potawatomi, and Miami tribes were the most pervasive tribes in the prairies surrounding the Kankakee River in what was to become northwest Indiana (Callendar 1978:681, Callendar et al. 1978:656-657, Clifton 1978:725-726). They

created small villages along the Iroquois River and hunted and trapped throughout the area and exploited its aquatic sources. However, after siding with the British in the War of 1812 against the United States, and continuing bad relations and broken treaties with the Americans, the Potawatomi were forcibly removed from Indiana in 1838 in a federal government action known as the Potawatomi Trail of Death (Carmony 1998).

The General Land Office survey notes (1795-1840) and maps illustrate many of the cultural resources that were once within Newton County. Three wigwams, one Native American field, four historic agricultural fields, one old course of a river, and one cabin are recorded on the General Land Office maps of Newton County (Maust and Cochran 1989). Other historic landmarks that are illustrated on Maps of Indiana Counties in 1876 (Andreas 1968) are 42 school houses, five churches, five cemeteries and 47 farm houses. Guernsey (1932) shows an "Old Potawatomi Village" between Beaver Creek and the Iroquois River. Newton County currently has 613 historic structures throughout the county (Taylor 2009).

European settlers had been in Newton County since the early 1830's before the Native Americans had been forced out of the area. Like the Potawatomi, the settlers lived along and near the Iroquois River. Settlement of the whole county was slow due to the wetlands of the north; however, in 1835 Newton County was organized. Later in 1839, Newton was combined with its eastern neighbor Jasper County due to low populations in both counties. In 1860, Newton County was reorganized as its own individual county. Expansion of people into Newton County grew more rapidly with the development of the railroads. As more people came to the county the more drastically the landscape changed. Prairie lands were transformed into farmland and marsh lands were drained. Beaver Lake covered 16,000 acres with an additional marshland of 26,000 acres and was a major source of resources for the Native Americans who once populated the area (Heistand 1951:8-9). Beaver Lake was drained near the end of the Civil War to the north of Morocco through Lake Ditch and into the Kankakee River (Taylor 2009:12).

Archaeological Survey

Introduction

902.84 acres (365.33 hectares) of agricultural land were surveyed by pedestrian transects during this project. The entire survey area was located on till plains/moraines. The survey documented 89 new archaeological sites and recovered 55 prehistoric artifacts and 1274 historic artifacts. No human remains were discovered as a result of this grant project. The results are discussed by survey area below.

Methods

Field Survey

For this project, 900 acres of pedestrian survey were initially proposed. It was anticipated that by surveying 900 acres, approximately 200 to 250 new sites would be discovered to increase the existing site database. Our planning projected that different landforms and environmental zones consisting of flood plain, moraines, and till plain would be systematically surveyed. Areas were selected for survey using topographic maps, aerial maps, soil information, historic sources and reconnaissance information. The survey was constructed to sample different regions within the project area, with an emphasis on the southern portion of the county. Cultivated fields with optimal visibility were sought for survey. Ultimately, landowner permission and field visibility dictated the areas sampled by this survey which included approximately 902.84 acres of till plain/moraines.

This project was conducted by AAL Archaeologists and AAL student employees. Principal Investigators were AAL Archaeologists Christine Thompson and Kevin C. Nolan. The field survey was conducted between August 6, 2014 and November 1, 2014. The field survey was executed using pedestrian transects spaced at 10 meter intervals. The survey interval was reduced to 5 meters when artifacts were encountered. The areas surveyed by pedestrian transects had between 70 and 95 percent ground surface visibility. All artifacts that were within two meters of the first artifact encountered, except fire-cracked rock and brick, were collected, bagged and given a temporary transect and find numbers. Objects found farther than that within the same transect were given the same transect number and the next sequence number. If a site only consisted of one collection point, a 10 x 10 meter radial survey was conducted around the point. Each new radial find was assigned a new find number. If multiple artifacts were encountered along multiple transects, short transects were run at five meter intervals to refine the boundaries of the cluster. Fire-cracked rocks and bricks were counted in the field, but were not collected. Find points were mapped with a Trimble GeoXT Series GPS with a minimum of 20

readings logged for each find spot. GPS data was post-processed to sub-meter accuracy using Trimble GPS Pathfinder Office series 5.3 software and exported to ESRI shapefile formats (UTM NAD83 Zone 16N) for inclusion in the project GIS. Field notes were maintained by AAL field supervisors.

Laboratory

All collected artifacts were taken to the AAL laboratory for processing, identification, analysis and temporary curation. Artifacts were cleaned, classified and catalogued. Definitions used for classifying prehistoric lithic materials are included in Volume 2, Appendix B. Diagnostic point types were classified and dated using standardized reference materials (Justice 2006). Metric attributes and raw material identifications were recorded in accordance with AAL standards (Volume 2, Appendix C). Lithic raw materials were identified by comparison with reference samples and published descriptions on file in the AAL laboratory (Cantin 2008; DeRegnaucourt and Geogiady 1998; Stelle and Duggan 2003). Their association was reported to geologic period, with the chert typology being reported as the type most consistent with the specimen. All prehistoric artifact and chert identifications were made microscopically at 10x or greater. Historic artifacts were identified and dated using published references (Horn 2005; IMACS 1984, 1992, 2009; Lofstrom et al. 1982; Majewski and O'Brien 1987; Miller 2000; Nelson 1964; ODOT 1991; Standler 2006; Stelle 2001). Notes, maps and photographs were reviewed and prepared for illustration and curation. State site numbers were obtained and a DHPA Sites and Structures Inventory form was entered in SHAARD for each site identified during the project.

BSU AAL Standard Lithic Identification Method

By Kevin C. Nolan, Mark A. Hill, and Colin L. Macleod

Chippable stone raw materials were identified in comparison with the AAL chert collections. All artifacts are compared macroscopically and microscopically with samples of known provenience from the AAL comparative chert collection. The comparative collection contains hundreds of samples of all of the known varieties of Indiana chert and several cherts from neighboring states. This provides an invaluable perspective on the variability within each defined category. Our method of raw material identification involves several steps.

The initial step involves the visual sorting of materials into groups based on broad categories of raw materials such as sedimentary rocks, igneous rocks, cherts, quartzites, orthoquartzites, chalcedonies, obsidian, and other metamorphic, sedimentary, and igneous categories (Kooyman 2000:37). As most of the raw materials in the Midwest consist of marine cherts, the next steps are often the key to material identification. Each artifact is macroscopically identified with probable match categories using hand samples and reference manuals (e.g., Cantin 2008) at this stage. Attention is paid to luster, color, patterning, inclusions, translucency,

and texture. Next, several samples from the probable match categories are collected and examined under magnification with a 57900-04 Boreal Zoom Stereo Microscope at 10x to 40x magnification. We microscopically compare matrix, color, texture, inclusions, luster, and other physical and visual characteristics of the unknown artifact to the known comparative collection samples from the probable match categories and Cantin's (2008, 2011) resources. This step is crucial in obtaining the most accurate identification possible as Cantin (2011:Slide 10) notes that "Macroscopic identification is sketchy at best… microscopic identification … is far more reliable." Further, Cantin (2008:2) notes that what he terms "microfabric" is perhaps the best way to differentiate chert types and varieties. Microfabric is a result of the genesis of the raw material including the process by which the rock was formed (metamorphic, igneous, sedimentary) and in particular, with the marine cherts of the Midwest, the source of silica, the environment in which the silica is precipitated, and the matrix within which this silica is deposited (Andrefsky 2005). Microfabric may include evidence of bedding, fossils present in the environment at the time of formation, or structures such as oolites, silicified worm burrows, and crystalline growths. As fossils and other structures will vary with the conditions and time in which these cryptocrystalline silicates were formed, they are often good visual indicators of raw material source.

The propensity for micro/cryptocrystalline silicates to be strongly influenced by formational and diagenetic processes indicates that identifications of chert material are most appropriately an assessment of the geological age of the material (Luedtke 1992). For this reason specimens are identified to geologic age (period) which is, in turn, consistent with specific geologic formations. Next, the more specific material "type", as described in the reference collection and Cantin (2008), is noted based on the consistency of the material with listed sources. The inconsistent nature, and often heterogeneous representation of many of the identifying features of micro- and cryptocrystalline silicates means that any one of these features is not enough to make a confident material association. A combination must therefore be employed in order to mount evidence for the association of the material with a particular type, and by extension, source. This combination, particularly in small or anomalous samples can lead to association with multiple sources. This is particularly true of materials that share the same age and geographic location as they will have likely undergone comparable formational and diagenetic processes. Where the sample resembles multiple sources in our collection, such is noted. Our identifications to "type" are illustrative of method and not an indication of source.

Finally, we revisit Cantin's (2008:9) map of the known provenience of Indiana chert types to identify the most proximate sources (aside from the nearly ubiquitous gravel chert). Samples from the proximate source(s) are selected and compared microscopically to the unknown artifact. This final step is employed to ensure that we are able to rule out a proximate source from our identification. If the local variety cannot be ruled out, identification will favor the proximate source as most probable. However, location cannot be a primary criterion when attempting to identify the raw material of an artifact. Identifications are based on the best overall

match of observed macroscopic and microscopic characteristics between known and unknown samples. If a clear match cannot be made, the material is categorized as unidentified.

Rocks of the same age and of the same or comparable formation may, and often do, have distributions outside of Indiana and can find their way into Indiana from these extra-locational sources. This occurs through glaciations, human mobility, or trade as a result of contact. For this reason Cantin's (2008) work, while effective at identifying the known locations of primary chert sources in Indiana, cannot alone account for the diversity of materials found archaeologically in Indiana. Cantin's information on chert is therefore supplemented with sources from surrounding states such as Illinois Michigan, Ohio, and Kentucky (DeRegnaucourt and Geogiady 1998; Stelle and Duggan 2003) which stand to have the greatest extra-local influence on lithic material types found in Indiana.

There is always the possibility of misclassification with visual identification; however, our procedures are the same for all projects, and replicable across projects that employ the same procedures. Inter-observer variability is unavoidable in the absence of discrete criteria for identification of unknowns with ideal categories. Our procedures attempt to limit the magnitude of these errors. Finally, it must be said that identifications made by these and similar procedures are provisional, and cannot definitively match an unknown to a known geological provenience. For more definitive results, geochemical methods such as Instrumental Neutron Activation Analysis, X-ray Florescence, or other methods are required (Andrefsky 2005; Kooyman 2000). However, using the criteria and procedures detailed above, our identifications (and all visual identifications) should be taken as an assessment of the geological age and context of the raw material. Rocks of the same age and context have known distributions outside of Indiana and may well find their way into Indiana from another deposit of the same geological formation through natural or cultural processes. Our identifications do not presume mechanism of transport.

All materials generated by this project were accessioned under AAL Accession number 14.29. All project materials were curated at Ball State University, Department of Anthropology. Landowners were given their choice of having the artifacts returned to them or having the artifacts curated at Ball State University (see Volume 2, Appendix D for listing). All artifacts returned to the landowners were identified, analyzed, measured, and photographed per DHPA guidelines. A DVD of these artifact photos is attached to this report. The DVD with the artifact photos also contains the catalog sheets for all sites and Volume 2 of the report. All artifacts not requested to be returned to the landowner were catalogued, labeled and curated at Ball State University's Applied Anthropology Laboratories and will be used for student education and research.

Collector Visit

In addition to field and laboratory investigations, we examined two private collections that reveal archaeological information and data beyond what has been recorded by professional investigations. AAL archaeologists were contacted by [redacted], a prehistoric artifact collector from Jasper County, and we arranged a meeting in order to document and investigate his collection, which include artifacts and information from Newton County. The results of this analysis are presented in full in Macleod et al. (2015). After our public presentation on April 27, 2015 we were contacted by [redacted]. [redacted] sent us pictures of his collection from Newton County, but also notified us of two larger collections on display at the Newton County Library. Of the two collections at the library, only one is documented to come completely from Newton County. The Carlson collection was collected by brothers David, Ronald, and Victor Carlson on farms owned and managed by the Carlson family in Beaver and Washington Townships (Mary K. Emmrich, personal communication June 9, 2015). The Perkins collection was mainly local in origin (Beaver and McClellan Townships), but contained multiple non-local specimens (Mary K. Emmrich, personal communication June 9, 2015). Due to this and limited time, only the Carlson collection was documented.

When recording the private collections, the collection was examined initially in order to assess general artifact classes and raw material association. Once this was roughly determined, the artifacts were scanned and/or photographed in order to keep a record of the collection. These images were saved with reference to a spreadsheet file where initial material type and artifact class were recorded. Projectile points were sorted by base shape and raw material. A total of 265 points were analyzed and documented. The Carlson collection also contained 41 ceramics which were documented and described. Artifact photographs and scans from the Carlson Collection are presented in Volume 2, Appendix H. The data from the [redacted] Collection is available in the FY2014 HPF Grant Report for Jasper County, Volume 2, Appendices G and H (Macleod et al. 2015). The resources afforded by these private collections will be essential to developing a fuller understanding of the content and location of Newton County's cultural resources.

Archaeological Survey Results

A total of eight survey areas were investigated as part of this grant project as shown in (Figure 14).

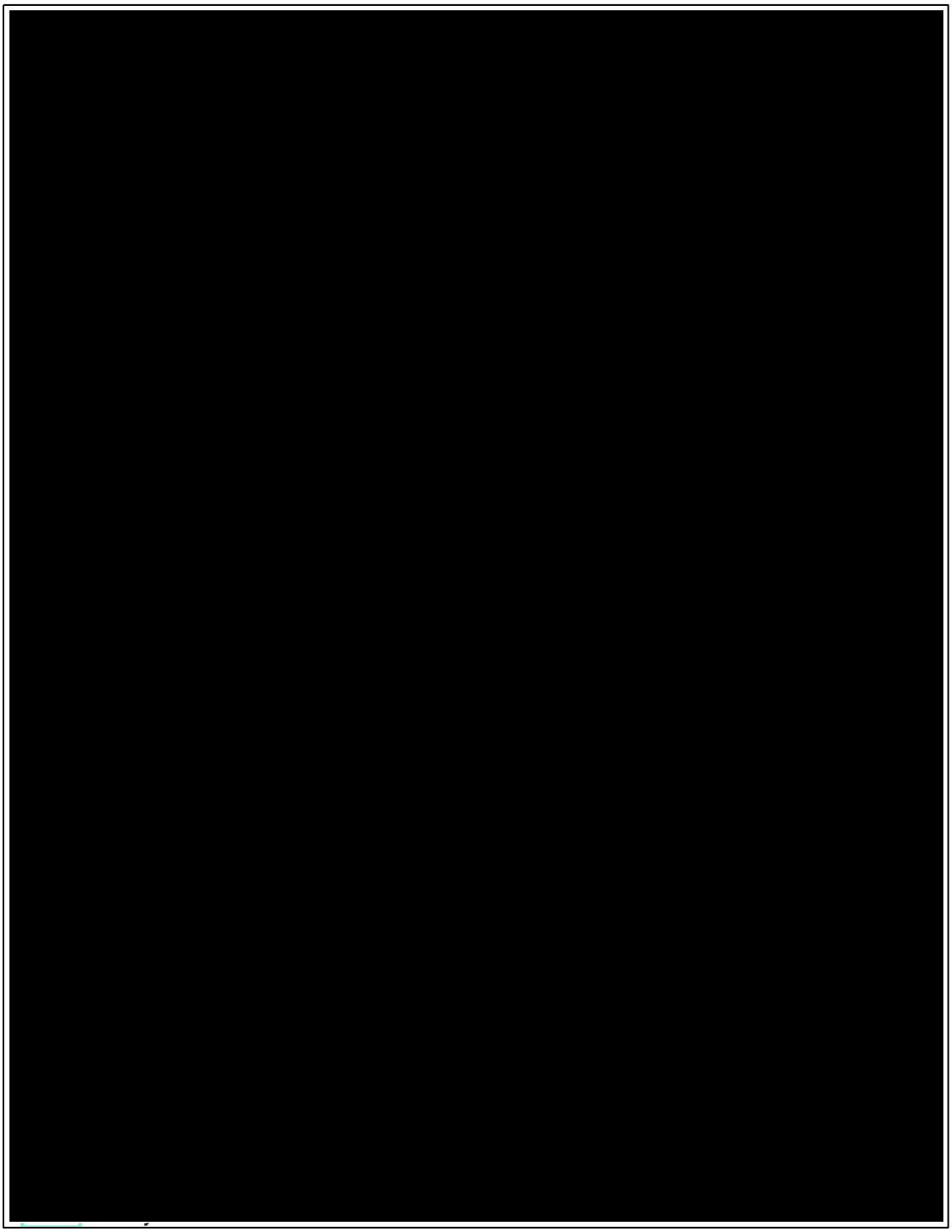


Figure 14: 2011 Aerial (Indiana Data Spatial Service) showing the location of the eight survey areas within Newton County.

Survey Area 1

Survey Area 1 was located in [redacted] Township in [redacted] as shown on the Newton County map in the "Illustrated Historical Atlas of the State of Indiana" (Andreas 1968) and the USGS 7.5' [redacted] Quadrangles (Figure 15 and Figure 16). The property was surveyed on August 6, 2014. Ground surface visibility was approximately 85 percent with small amounts of corn debris and the corn stalks themselves being the only visual obstacle. The field was still planted in corn, which was approximately seven to 11 feet tall. Approximately 41.77 acres were surveyed consisting of till plain and moraines. The area contained Montgomery (MP), Papineau (PaA), Simonin (SmB) Strole (SwA), and Wesley (WkA) soils. No sites were encountered during the survey.

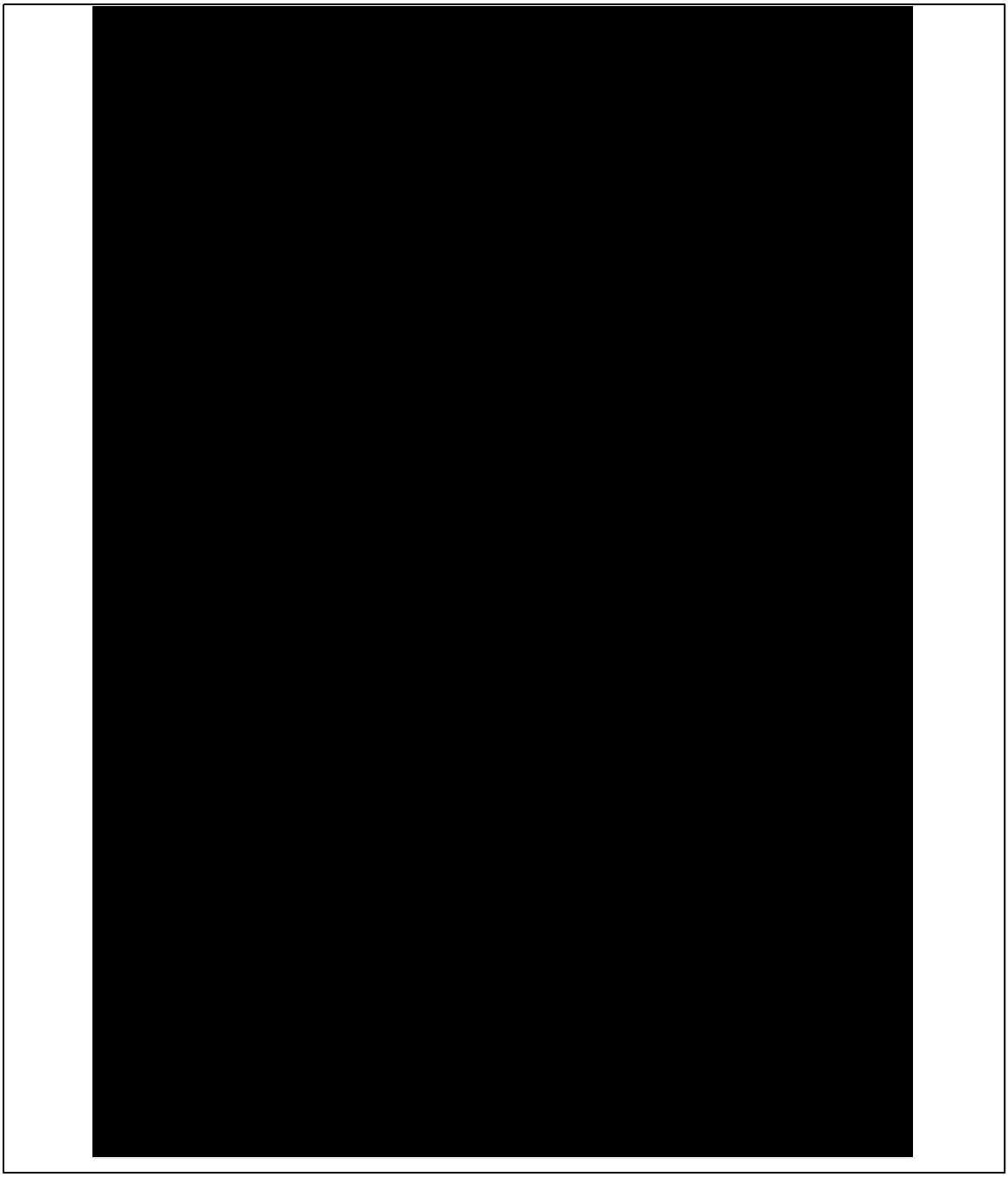


Figure 15: A portion of the map of [redacted] Township, Newton County in the "Illustrated Historical Atlas of the State of Indiana" (Andreas 1968) showing Survey Area 1.

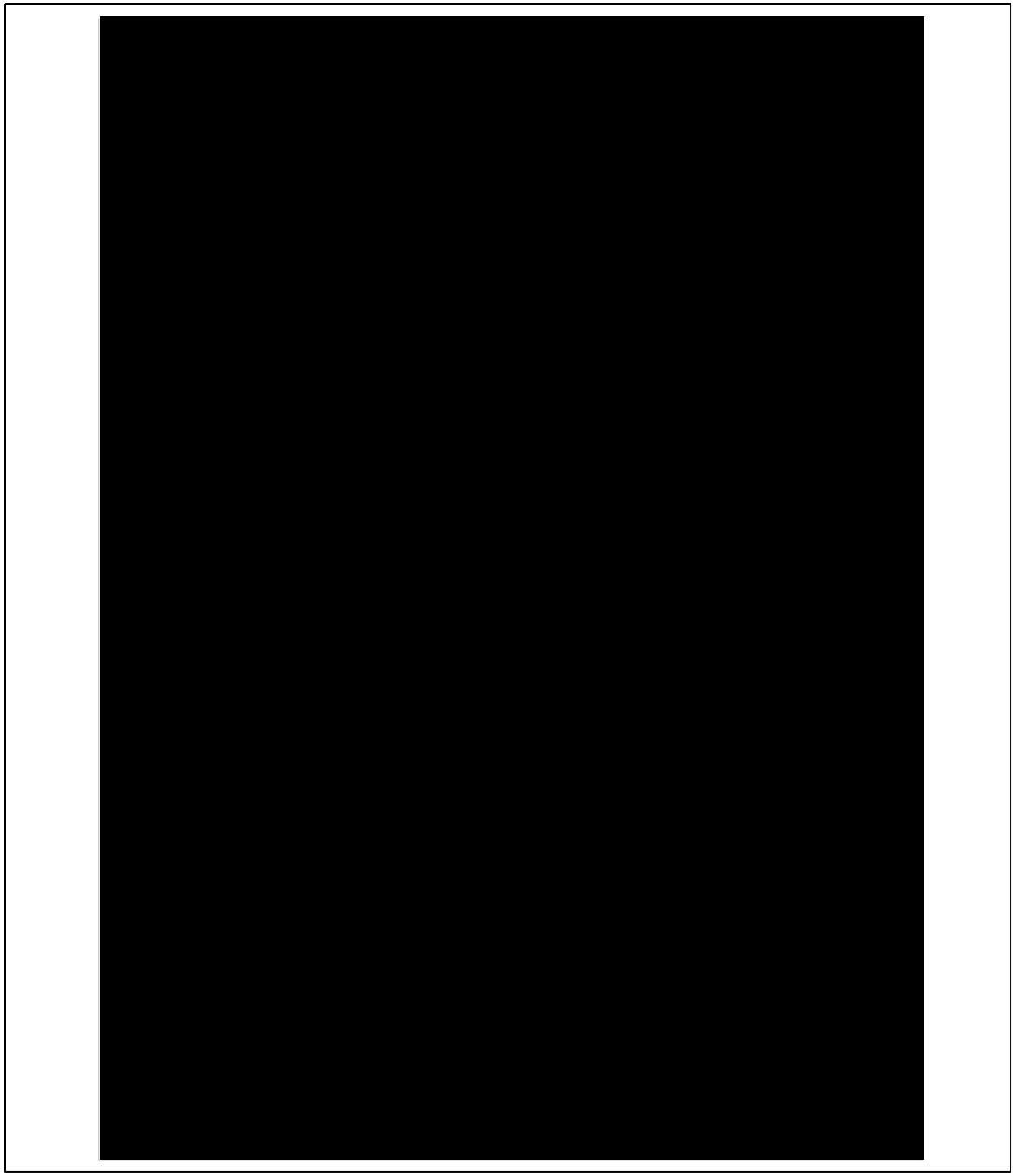


Figure 16: A portion of the USGS 7.5' [redacted], Indiana Quadrangles showing the location of Survey Area 1.

Artifacts

No artifacts were encountered in Survey Area 1.

Sites

No archaeological sites were recorded in Survey Area 1 (Figure 17 and Figure 18).

Density

Survey Area 1 consisted of approximately 41.77 acres of till plain and moraines. Within Survey Area 1, a density of zero sites per 41.77 acres occurred and sites covered 0.00 percent of the surface area.

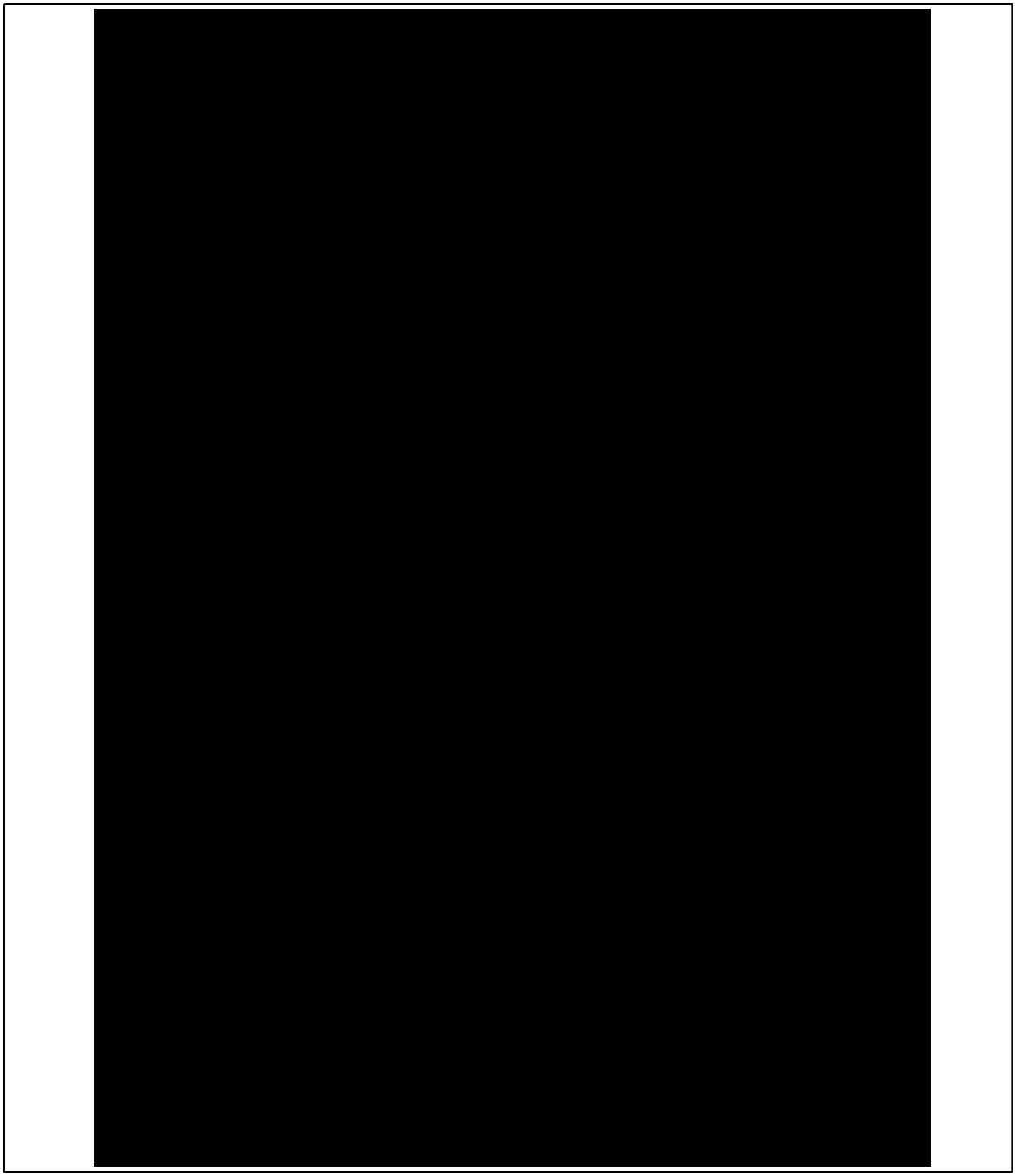


Figure 17: A portion of the USGS 7.5' [redacted], Indiana Quadrangles showing the lack of sites in Survey Area 1.

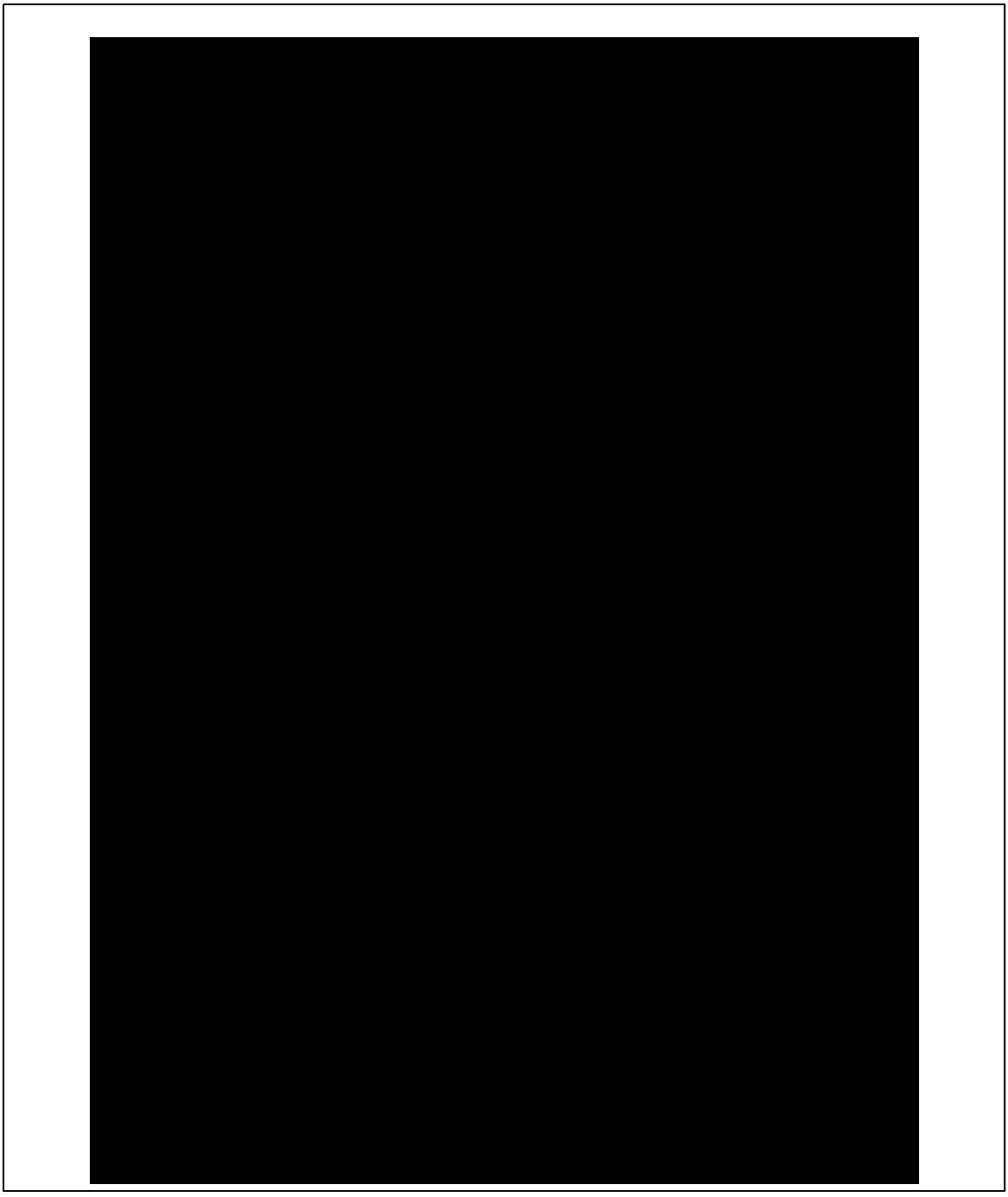


Figure 18: 2011 Aerial (Indiana Data Spatial Service) showing the lack of sites in Survey Area 1.

Survey Area 2

Survey Area 2 was located in [redacted] Township in [redacted] as shown on the Newton County map in the "Illustrated Historical Atlas of the State of Indiana" (Andreas 1968) and the USGS 7.5' [redacted] Quadrangle (Figure 19 and Figure 20). The property was surveyed on August 14. 2014. Ground surface visibility was approximately 75 percent with small amounts of corn debris, and the corn stalks themselves being the only visual obstacles. The field was still planted in corn, which was approximately seven to 11 feet high. Approximately 81.54 acres were surveyed consisting of till plains/moraines. The area contained Aubbeenaubbee-Whitaker (AuA), Darroch (DcA), Foresman (FoA and FeA), Oakville (OaB), and Selma (Sg and Sk) soils. Eleven sites were encountered during the survey. The sites ranged in size from prehistoric and historic isolated finds to a historic scatter of 4,751.25 square meters (1.17 acres).

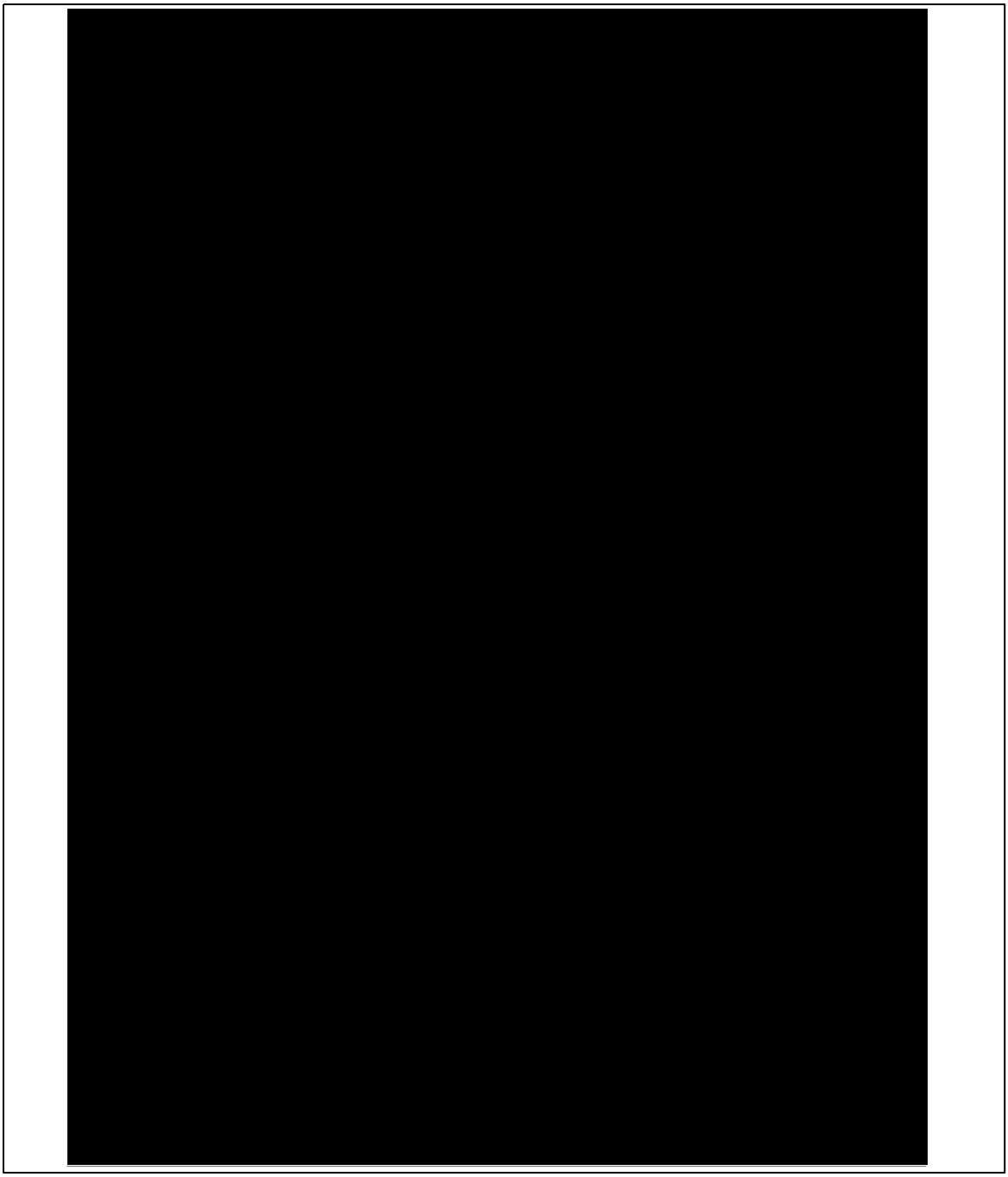


Figure 19: A portion of the map of [redacted] Township, Newton County in the "Illustrated Historical Atlas of the State of Indiana" (Andreas 1968) showing Survey Area 2.

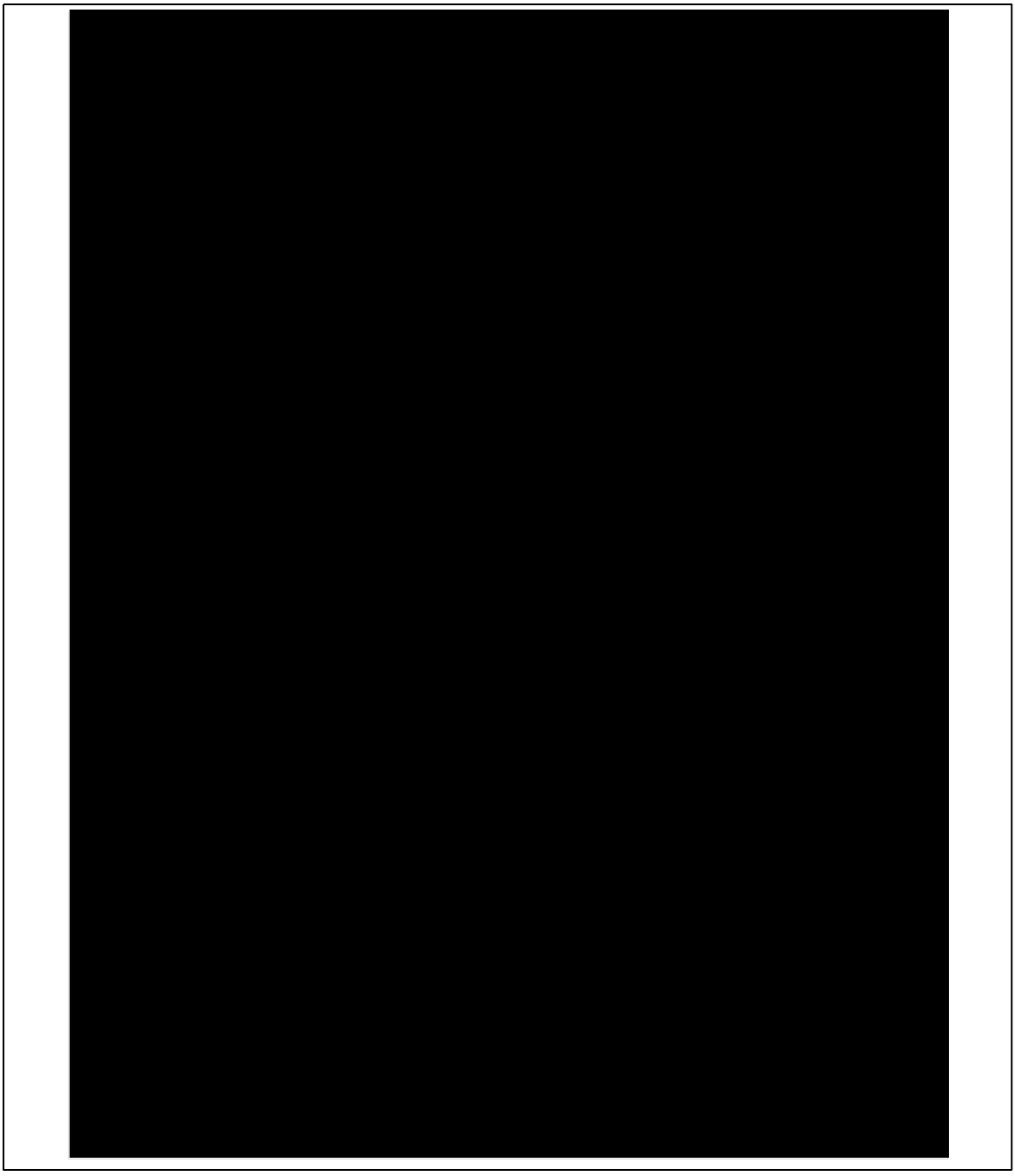


Figure 20: A portion of the USGS 7.5' [redacted], Indiana Quadrangle showing the location of Survey Area 2.

Artifacts

A total of 247 artifacts were encountered in Survey Area 2. Table 6 provides a list of the artifacts recovered by category. Sample artifacts are shown in Figure 21, Figure 22, Figure 23 and Figure 24. Artifacts are listed by individual site in Volume 2, Appendix E.

Seven prehistoric artifacts were recovered. No diagnostic prehistoric artifacts were recovered from Survey Area 2.

Two hundred and forty historic artifacts were recovered from Survey Area 2 and of those, 220 are diagnostic. Chronologically expressed these items include redware recovered from site 12-N-42 which was manufactured between 1725 to present (Stelle 2001:Chapter I). Decorated porcelain recovered from site 12-N-38 which were manufactured between 1745 and 1850 (Stelle 2001:Chapter I). Aqua glass recovered from sites 12-N-38, 42, 46, and 47 was manufactured between 1800 to the 1920s (Horn 2005:1). Decorated Ironstone recovered from site 12-N-42 was manufactured from 1800 to circa 1840 (Majewski and O'Brien 1987:120-123). Blue transferprint whiteware recovered from site 12-N-38 was manufactured from 1820 to 1860 (Stelle 2001:Chapter I). Plain whiteware recovered from sites 12-N-38, 42, and 47 which was manufactured from 1820 to present (Stelle 2001:Chapter I). Green transferprint whiteware recovered from site 12-N-38 which was manufactured between 1830 to 1850 (Lofstrom et al 1982:14). Yelloware recovered from site 12-N-42 which was manufactured between 1830 to present (ODOT 1991: 77). Stoneware with Albany glaze interior and a Bristol glaze exterior recovered from sites 12-N-47 and 48 which was manufactured from 1830 to 1940 (Stelle 2001:Chapter I). Stoneware with Bristol glaze interior and exterior recovered from sites 12-N-38 and 42 which was manufactured between 1835 to present (Stelle 2001:Chapter I). Blue and green handpainted whiteware recovered from site 12-N-38 which was manufactured between 1840 to 1860 (Majewski and O'Brien 1987:157). Plain ironstone recovered from sites 12-N-38, 42, and 47 which was manufactured between 1842 to 1930 (Miller 2000; Stelle 2001:Chapter I). A Prosser button recovered from site 12-N-42 which was patented in 1849 (IMACS 2001:475). Amber glass recovered from sites 12-N- 38 and 42 which was manufactured between the 1860s to present (Horn 2005:1). Clear glass recovered from sites 12-N-38, 42, 44, and 47 which was manufactured between 1875 to present (IMACS 1992:473). A wire cut nail recovered from site 12-N-42 which was manufactured between the 1880s to present (Nelson 1964). Amethyst glass recovered from sites 12-N-38, 41, 42, and 47 which was manufactured between 1885 to 1920 (Horn 2005:1). A Peter's Quickshot 12 gauge shotgun shell recovered from site 12-N-42 which was manufactured between 1887 to 1934 (Standler 2006). Semi-Porcelain recovered from sites 12-N-38, 42, and 47 which was manufactured between 1890 to present (ODOT 1991:177). Cobalt glass recovered from site 12-N-42 which was manufactured between the 1890s to present (Horn 2005:1). Milk glass recovered from sites 12-N-38, 42, and 47 which was manufactured between the 1890s to present (Horn 2005:1). Stoneware with Albany glaze interior and exterior recovered from sites 12-N-38, 41, 42, and 47 which was manufactured with a termination date of

1940 (Stelle 2001:Chapter I). Stoneware with Albany glaze interior and salt glaze exterior recovered from sites 12-N-41 and 42 which was manufactured with a termination date of 1940 (Stelle 2001:Chapter I).

Table 6: Artifacts from Survey Area 2.

Prehistoric	No.	Historic	No.
Flake, Proximal	5	Ceramic, Porcelain	1
Flake, Shatter	2	Ceramic, Semi-Porcelain	4
		Ceramic, Ironstone	11
		Ceramic, Whiteware	59
		Ceramic, Yelloware	1
		Ceramic, Redware	1
		Ceramic, Stoneware	30
		Ceramic, Prosser Button	1
		Glass, Amber	4
		Glass, Amethyst	29
		Glass, Aqua	61
		Glass, Clear	10
		Glass, Cobalt	2
		Glass, Milk	8
		Metal, Nail	1
		Metal, Shotshell	1
		Metal, Unidentified	7
		Brick	5
		Coal	4
Total	**7**	**Total**	**240**

Figure 21: Representative historic ceramic artifacts from Survey Area 2 (photo by Felicia Konrad, Ball State University).

Figure 22: Representative historic stoneware artifacts from Survey Area 2 (photo by Felicia Konrad, Ball State University).

Figure 23: Representative historic glass artifacts from Survey Area 2 (photo by Felicia Konrad, Ball State University).

Figure 24: Representative historic metal artifacts from Survey Area 2 (photo by Felicia Konrad, Ball State University).

Sites

Eleven archaeological sites, 12-N-38 to 48, were recorded in Survey Area 2 (Figure 25 and Figure 26). Summaries for the individual sites are contained in Volume 2, Appendix F. Seven sites had diagnostic artifacts (12-N-38, 41, 42, 44, 46, 47, and 48). Two of the sites were prehistoric isolated finds (12-N-40 and 45) and one site was a prehistoric scatter (12-N-43). Four sites were historic scatters (12-N-38, 46, and 47), three sites were historic isolated finds (12-N-39, 44, and 48), and two site were multicomponent sites (12-N-41 and 42).

Nine sites were discovered on floodplains (12-N-38 to 46) and two sites were discovered on tillplains/moraines (12-N-47 and 48). One site was on Oakville fine sand (OaB) soil (12-N-38), three sites were on Selma silt loam (Sg) soil (12-N-39, 43, and 44), four sites were on Aubbeenaubbee-Whitaker complex (AuA) soil (12-N-40, 42, 46, and 48), and one site was on Darroch silt loam (DcA) soil (12-N-45). Two sites were found on multiple soil types. One was found on Aubbeenaubbee-Whitaker complex and Selma silt loam (AuA and Sg) soils (12-N-41) and one site was found on Aubbeenaubbe-Whitaker complex, Selma silt loam, and Selma silt clay loam (AuA, Sg, and Sk) soils (12-N-47).

Site 12-N-42 was a relatively large historic scatter. Historic maps fail to reveal any structures within or near the scatter (Andreas 1876; Geo. A. Ogle & Co 1916; Taylor 2009:59). No structural remnants or subsurface features were encountered. Therefore it seems likely that 12-N-42 was a historic dump site, rather than a primary deposit. This could indicate social attitudes in the area towards refuse disposal and the inclination of the people to dump certain kinds of items elsewhere rather than on house lots. The tight clustering of the scatter also suggests that the topography played a part in the formation of the site. The site sits on a slope in the topography, so as more artifacts were thrown into the deposit area, it is likely that they would roll into a tight clustering. The location of this slope also makes it unlikely that a structure would have been erected where the scatter was located. 12-N-42 was not recommended for further study because there was no indication it would have the potential to yield additional important information beyond the Phase I level. The rest of the site types found in Survey Area 2 are typically considered to not have the potential to yield additional information beyond the Phase I level and are therefore not considered eligible for the National Register of Historic Places.

Density

Survey Area 2 consisted of approximately 81.54 acres of till plain and moraines. Within Survey Area 2, a density of one site per 7.41 acres occurred and sites covered 5.47 percent of the surface area.

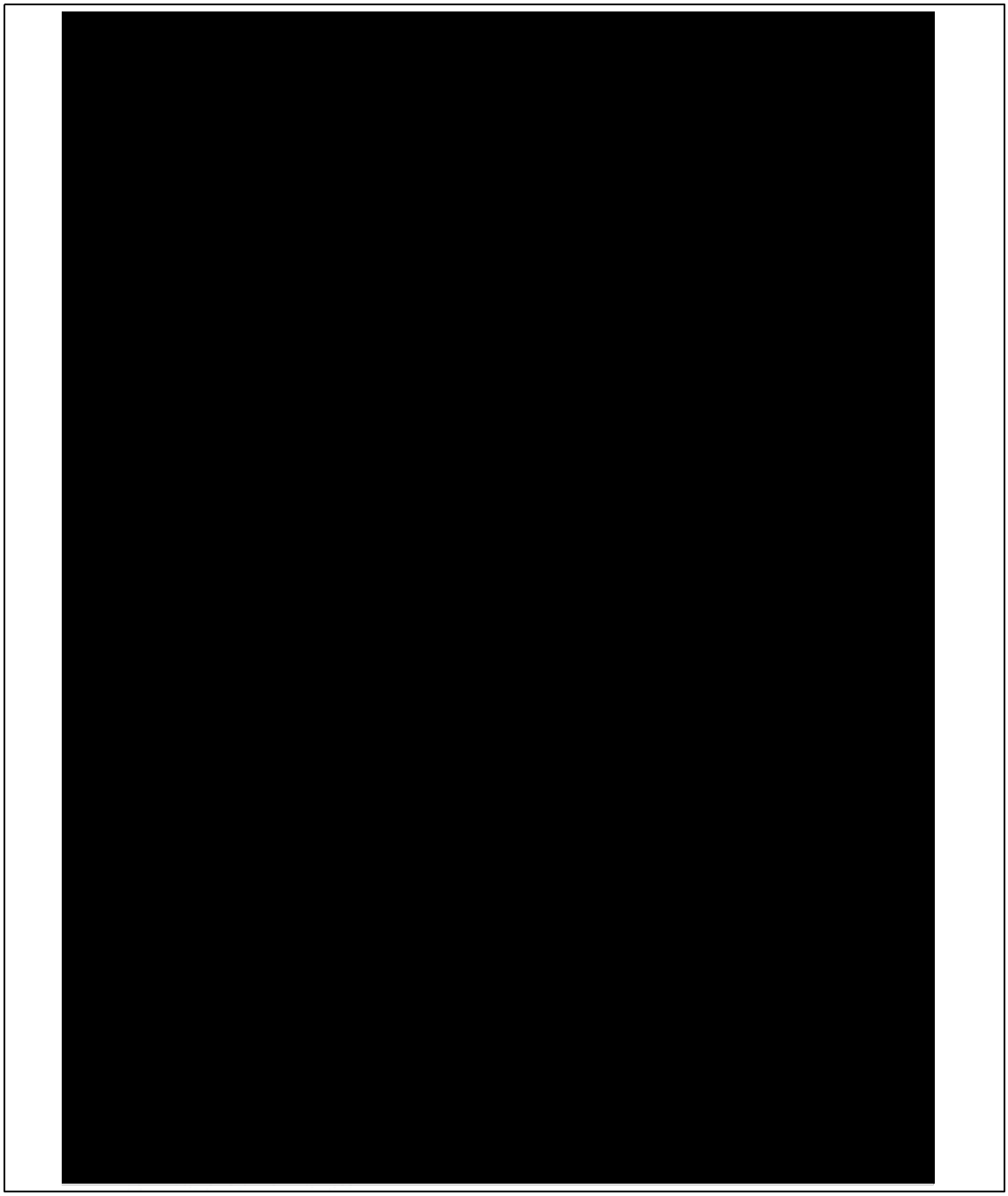


Figure 25: A portion of the USGS 7.5' [redacted], Indiana Quadrangle showing the location of sites 12-N-38 to 48.

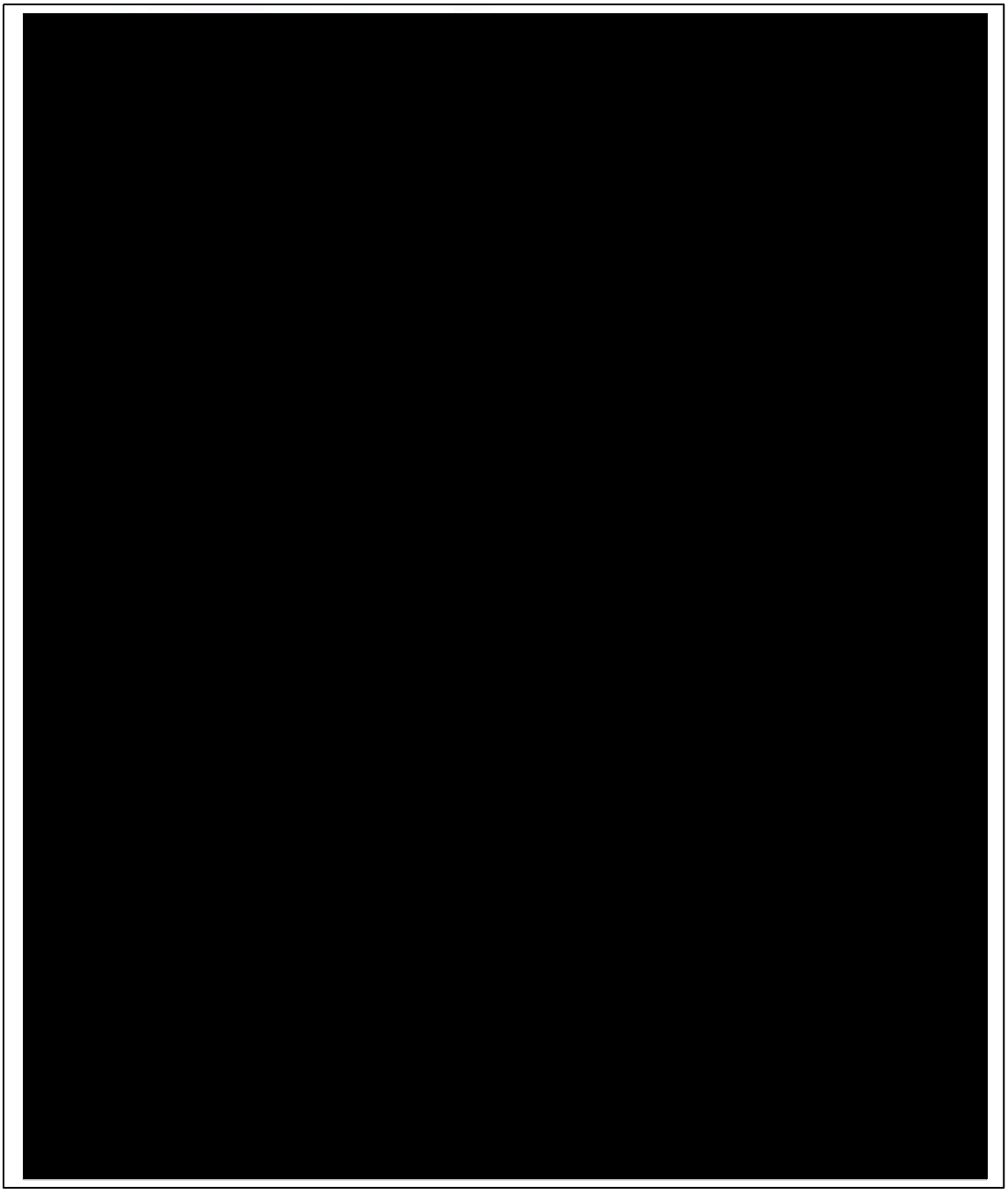


Figure 26: 2011 Aerial (Indiana Data Spatial Service) showing the location of sites 12-N-38 to 48.

Survey Area 3

Survey Area 3 was located [redacted] Township in [redacted] as shown on the Newton County map in the "Illustrated Historical Atlas of the State of Indiana" (Andreas 1968) and the USGS 7.5' [redacted] Quadrangle (Figure 28 and Figure 29). The property was surveyed on August 29, 2014. Ground surface visibility was approximately 80 percent with small amounts of corn debris, and the corn stalks themselves being the only visual obstacles. The fields were planted in corn that was still standing, which ranged from seven to 11 feet tall. Approximately 48.24 acres were surveyed consisting of till plains/moraines. The area contained Darroch (DgA), Gilboa-Odell (GbA), Selma (Sk), Barce-Montmorenci complex (BfB2), and Simonin (SmB) soils. Eight sites were encountered during the survey. The sites ranged in size from prehistoric and historic isolated finds to a historic scatter of 5,431.77 square meters (1.34 acres).

The landowners [redacted] met the field crew at Survey Area 3 to discuss this and other parcels that they own. [redacted] brought artifacts with them were found on land that is now pasture [redacted] close to Survey Area 3. These artifacts included a corner notched, serrated, Early Archaic biface that is likely Blanding or Liston Creek chert, an unidentified biface blank, and a miscellaneous groundstone piece (Figure 27).

Figure 27: Late Archaic biface, biface blank, and groundstone found by [redacted] in pasture land close to Survey Area 3.

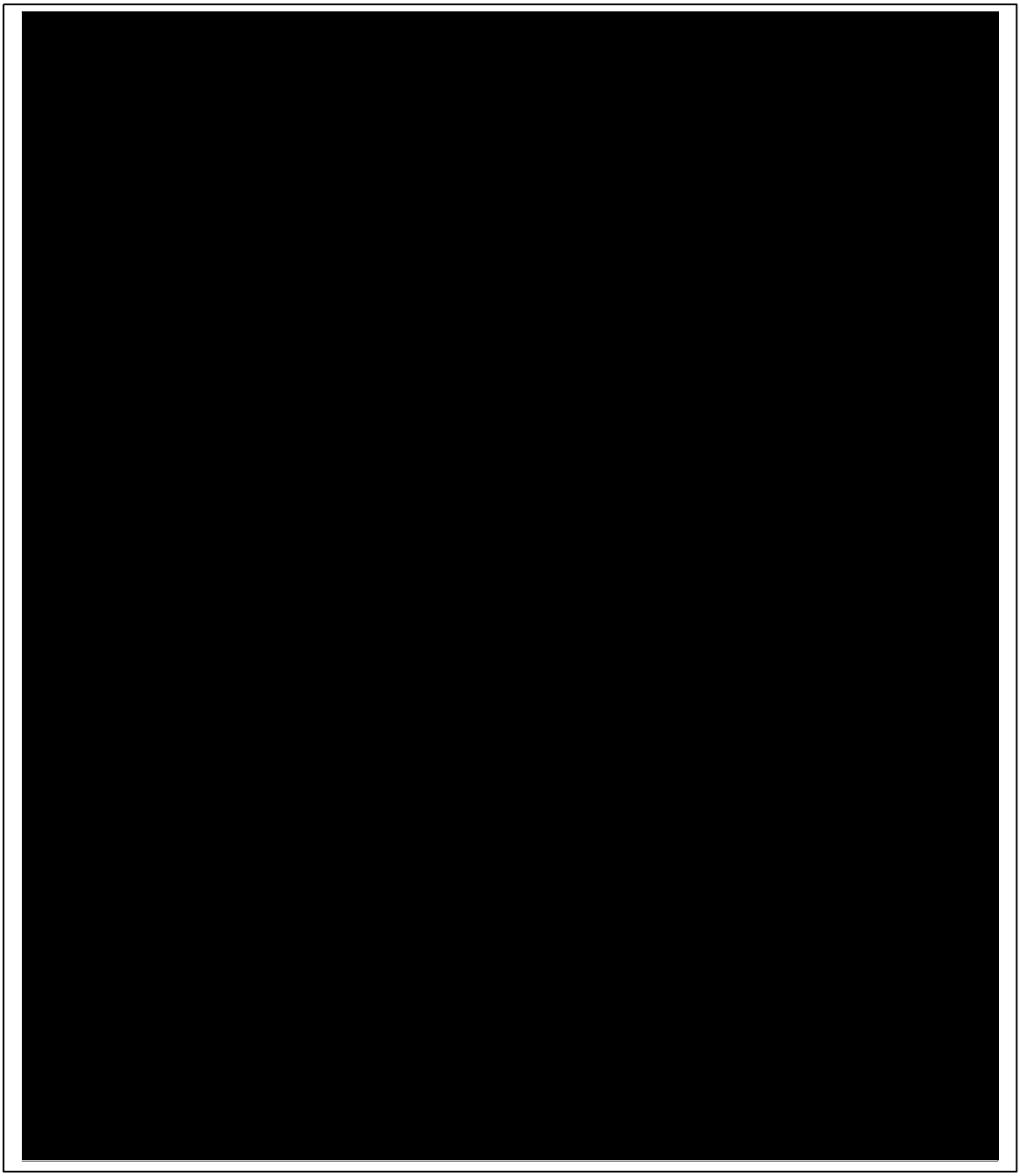


Figure 28: A portion of the map of [redacted] Township, Newton County in the "Illustrated Historical Atlas of the State of Indiana" (Andreas 1968) showing Survey Area 3.

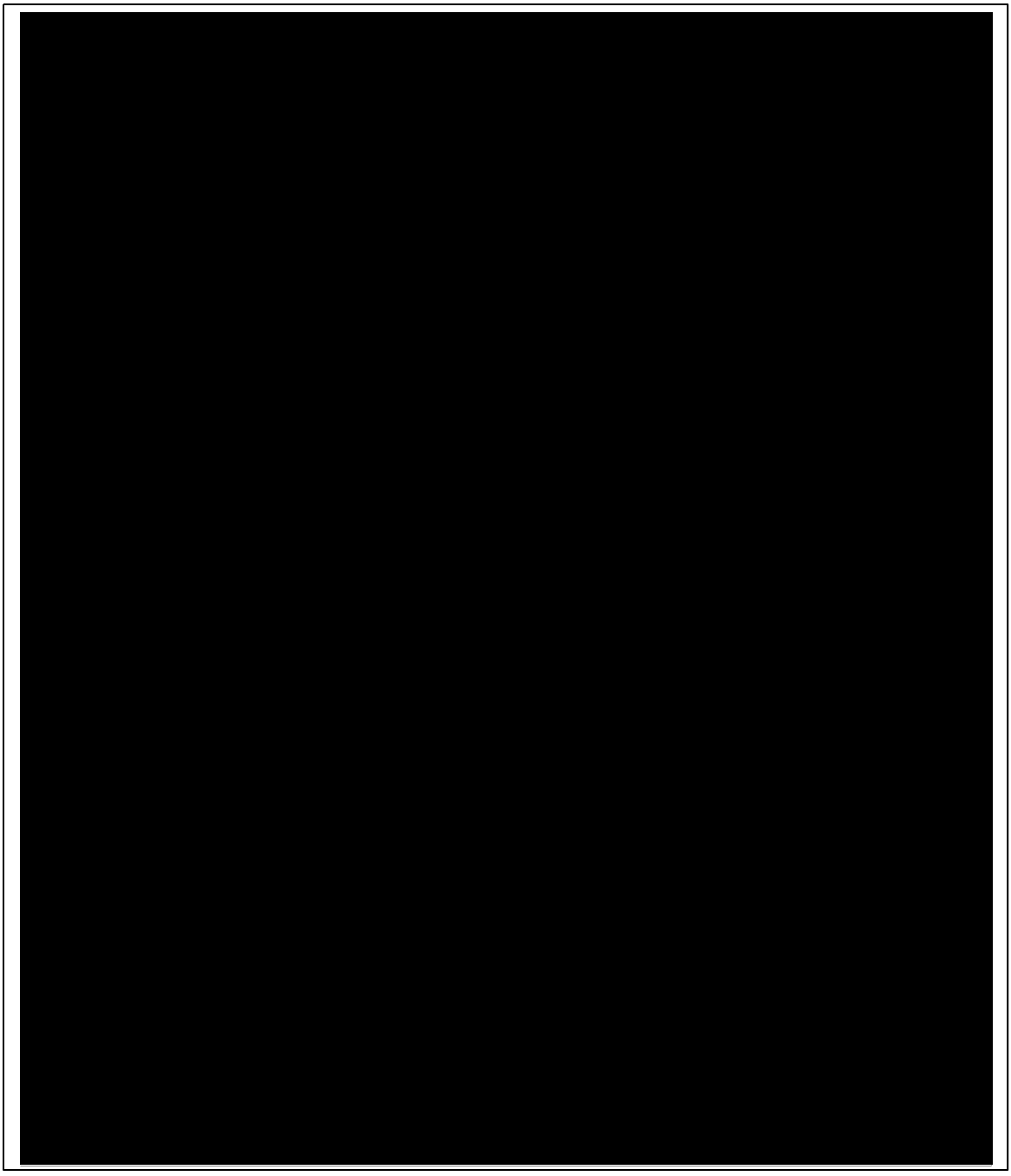


Figure 29: A portion of the USGS 7.5' [redacted], Indiana Quadrangle showing the location of Survey Area 3.

Artifacts

A total of 44 artifacts were encountered in Survey Area 3. Table 7 provides a list of the artifacts recovered by category. Sample artifacts are shown in Figure 21Figure 30, Figure 31, Figure 32 and Figure 33. Artifacts are listed by individual site in Volume 2, Appendix E.

Three prehistoric artifacts were recovered. No diagnostic artifacts were recovered from the Prehistoric period in Survey Area 3.

Forty one historic artifacts were recovered from Survey Area 3 and of those, 35 are diagnostic. Chronologically expressed these items include redware recovered from site 12-N-22 which was manufactured between 1725 to present (Stelle 2001:Chapter I). Aqua glass recovered from site 12-N-52 which was manufactured between 1800 to the 1920s (Horn 2005:1). Blue and white banded whiteware recovered from site 12-N-52 which was manufactured from 1820 to 1850 (ODOT 1991:177). Plain whiteware recovered from sites 12-N-49, 52, 55, and 57 which was manufactured from 1820 to present (Stelle 2001:Chapter I). Yelloware with Rockingham-Bennington glaze recovered from site 12-N-56 which was manufactured between 1830 to 1900 (ODOT 1991:177). Green hand painted whiteware recovered from site 12-N-52 which was manufactured between 1840 to 1860 (Majewski and O'Brien 1987:157). Plain ironstone recovered from site 12-N-52 which was manufactured between 1842 to 1930 (Miller 2000; Stelle 2001:Chapter I). Amber glass recovered from site 12-N-52 which was manufactured between the 1860s to present (Horn 2005:1). Green glass recovered from site 12-N-52 which was manufactured between the 1860s to present (Horn 2005:1). Stoneware with Albany glaze interior and brown salt glaze exterior recovered from sites 12-N-52 which declined in popularity in the 1860s (Stelle 2001:Chapter I). Clear glass recovered from sites 12-N-50 and 52 which was manufactured between 1875 to present (IMACS 1992:473). Stoneware with Albany glaze interior and exterior recovered from sites 12-N-52 and 55 which was manufactured with a termination date of 1940 (Stelle 2001:Chapter I). Stoneware with Albany glaze interior and brown salt glaze exterior recovered from sites 12-N-52 which was manufactured with a termination date of 1940 (Stelle 2001:Chapter I).

Table 7: Artifacts from Survey Area 3.

Prehistoric	No.	Historic	No.
Flake, Proximal	1	Ceramic, Ironstone	2
Flake, Shatter, Usewear	1	Ceramic, Whiteware	15
Groundstone Tool	1	Ceramic, Stoneware	9
		Ceramic, Yelloware	1
		Ceramic, Redware	2
		Glass, Amber	1
		Glass, Aqua	4
		Glass, Clear	4
		Glass, Green	1
		Brick	1
		Metal, Disc	1
Total	**3**	**Total**	**41**

Figure 30: Proximal Flake, Heat treated with use wear recovered from 12-N-53 in Survey Area 3 (photo by Felicia Konrad, Ball State University).

Figure 31: Representative historic ceramic artifacts from Survey Area 3 (photo by Felicia Konrad, Ball State University).

Figure 32: Representative historic glass artifacts from Survey Area 3 (photo by Felicia Konrad, Ball State University).

Figure 33: Representative historic metal artifacts from Survey Area 3 (photo by Felicia Konrad, Ball State University).

Sites

Eight archaeological sites, 12-N-49 to 50 and 52 to 57, were recorded in Survey Area 3 (Figure 34 and Figure 35). Summaries for the individual sites are contained in Volume 2, Appendix F. Six sites had diagnostic artifacts (12-N-49, 50, 52, 55, 56 and 57). Two of the sites were prehistoric isolated finds (12-N-53 and 54). Three sites were historic isolated finds (12-N-49, 56, and 57), two sites were historic scatters (12-N-50 and 55), and one site was a multicomponent site (12-N-52).

Seven sites were discovered on floodplains (12-N-49 to 50, 52 to 53, and 55 to 57) and one site was discovered on till plains/moraines. Four sites were located on Darroch loam (DgA) soil (12-N-49, 50, 53, and 54), two sites were located on Selma silty clay loam (Sk) soil (12-N-55, and 57), and one site was located on Gilboa-Odell complex (GbA) soil (12-N-56). One site was located on multiple soil types, Barce-Montmorenci complex and Darroch loam (BfB2 and DgA) soils (12-N-52).

The site types found in Survey Area 3 are typically considered to not have the potential to yield additional information beyond the Phase I level and are therefore not considered eligible for the National Register of Historic Places.

Density

Survey Area 3 consisted of approximately 48.24 acres of till plain and moraines. Within Survey Area 3, a density of one Prehistoric site per 6.03 acres occurred and sites covered 2.11 percent of the surface area.

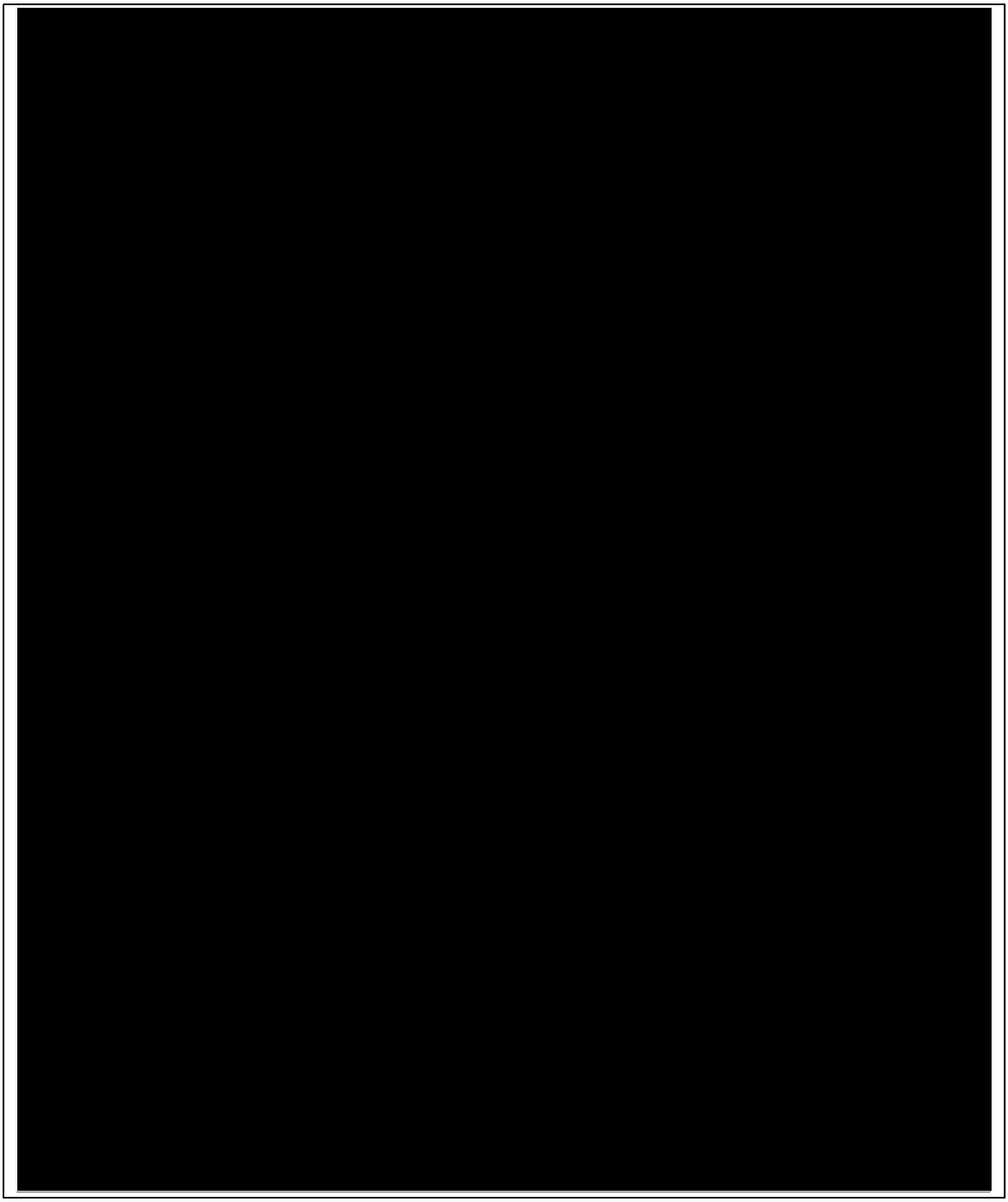


Figure 34: A portion of the USGS 7.5' [redacted], Indiana Quadrangle showing the location of sites 12-N-49 to 57.

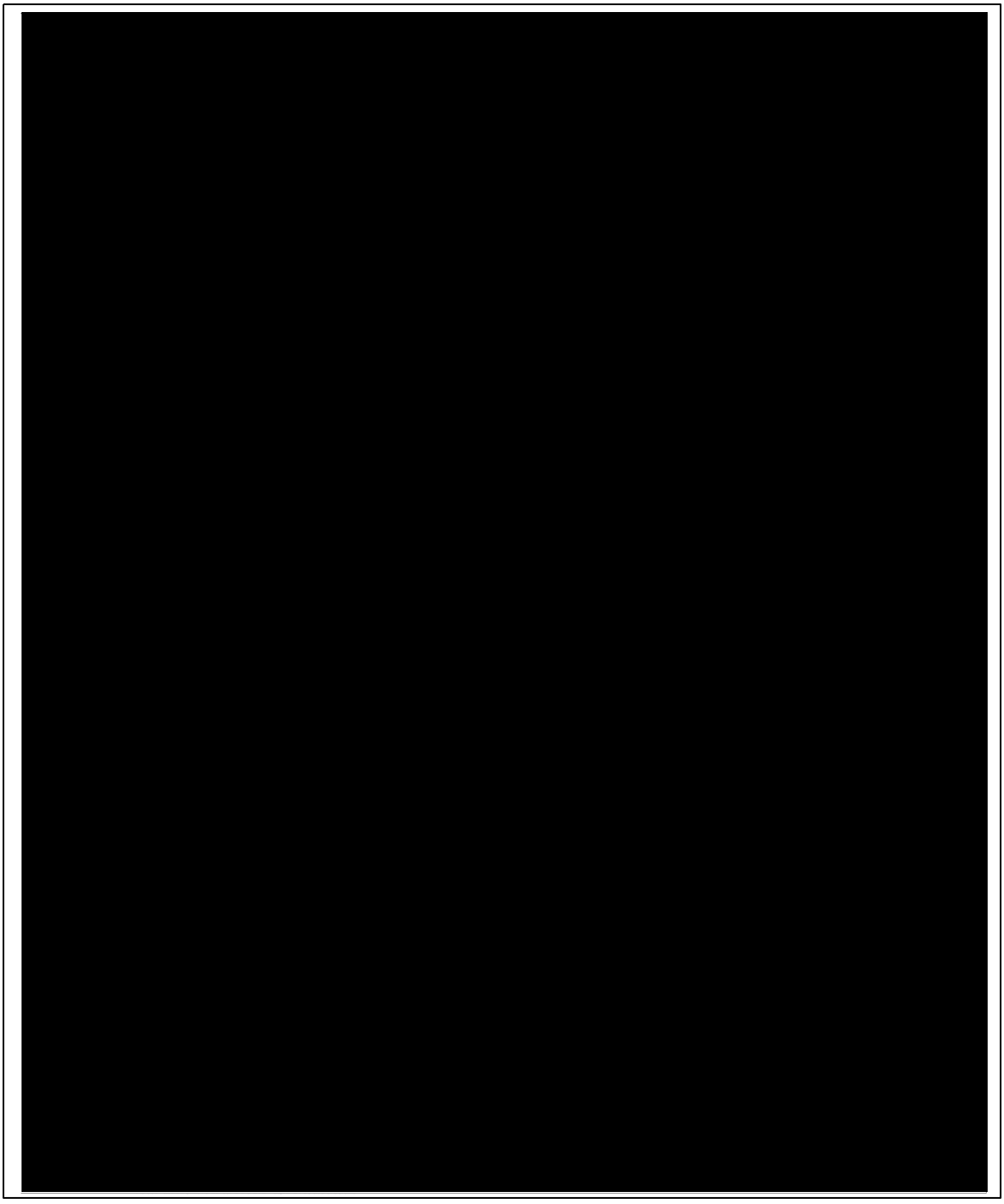


Figure 35: 2011 Aerial (Indiana Data Spatial Service) showing the location of sites 12-N-49 to 57.

Survey Area 4

Survey Area 4 was located in [redacted] Township in [redacted] as shown on the Newton County map in the "Illustrated Historical Atlas of the State of Indiana" (Andreas 1968) and the USGS 7.5' [redacted] Quadrangle (Figure 36 and Figure 37). The property was surveyed on September 29, 2014. The field surveyed was still planted in corn that was standing between seven to 10 feet tall. Ground surface visibility was approximately 75 to 80 percent with small amounts of corn debris, and the corn stalks themselves being the only visual obstacles. Approximately 126.73 acres were surveyed consisting of till plain and moraines. The area consisted of Aubbeenaubbee-Whitaker (AuA), Darroch (DcA), and Selma (Sg) soils. Ten sites were encountered during the survey. The sites ranged in size from prehistoric and historic isolated finds to a historic scatter of 1,640.39 square meters (0.41 acres).

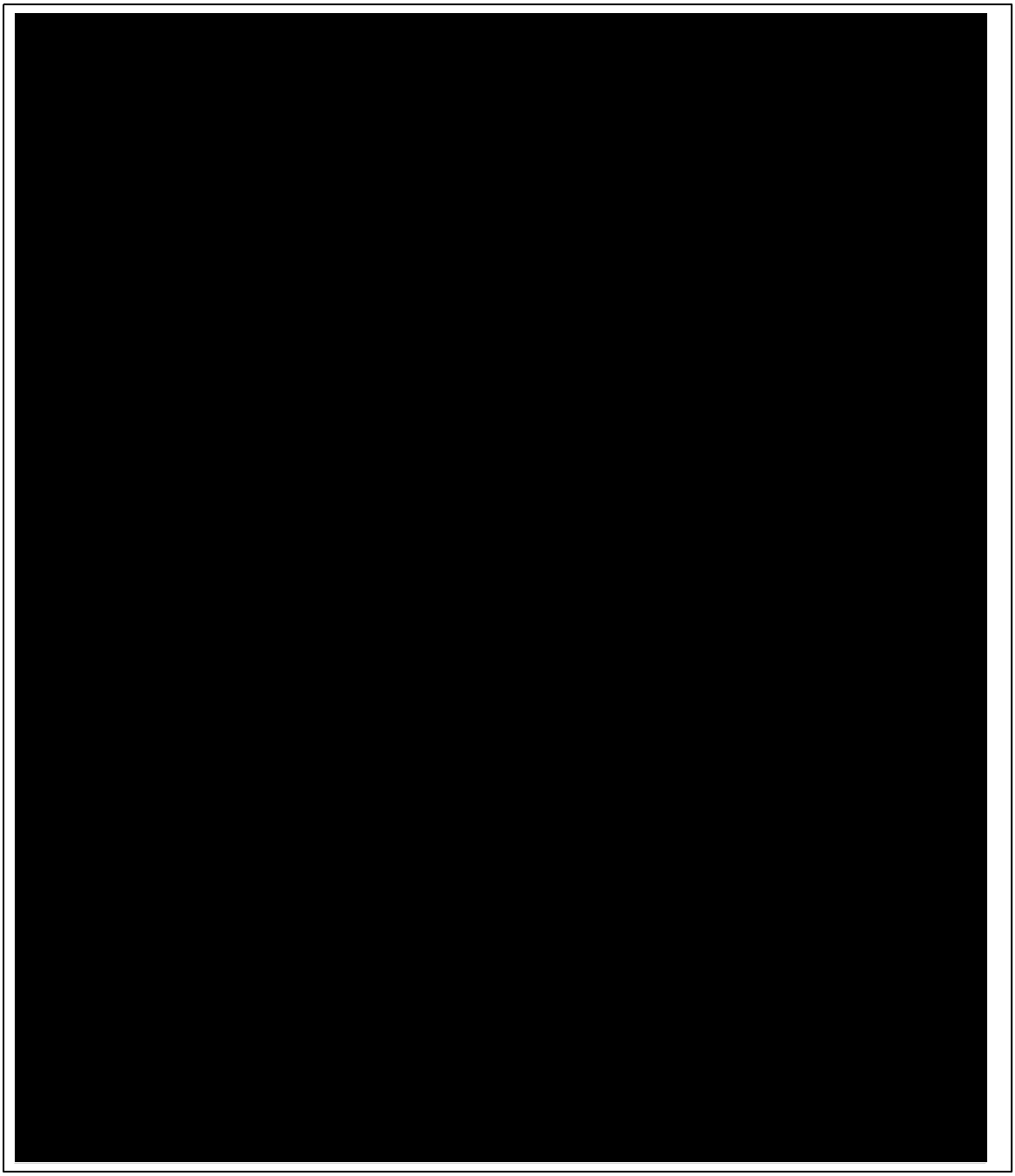


Figure 36: A portion of the map of [redacted] Township, Newton County in the "Illustrated Historical Atlas of the State of Indiana" (Andreas 1968) showing Survey Area 4.

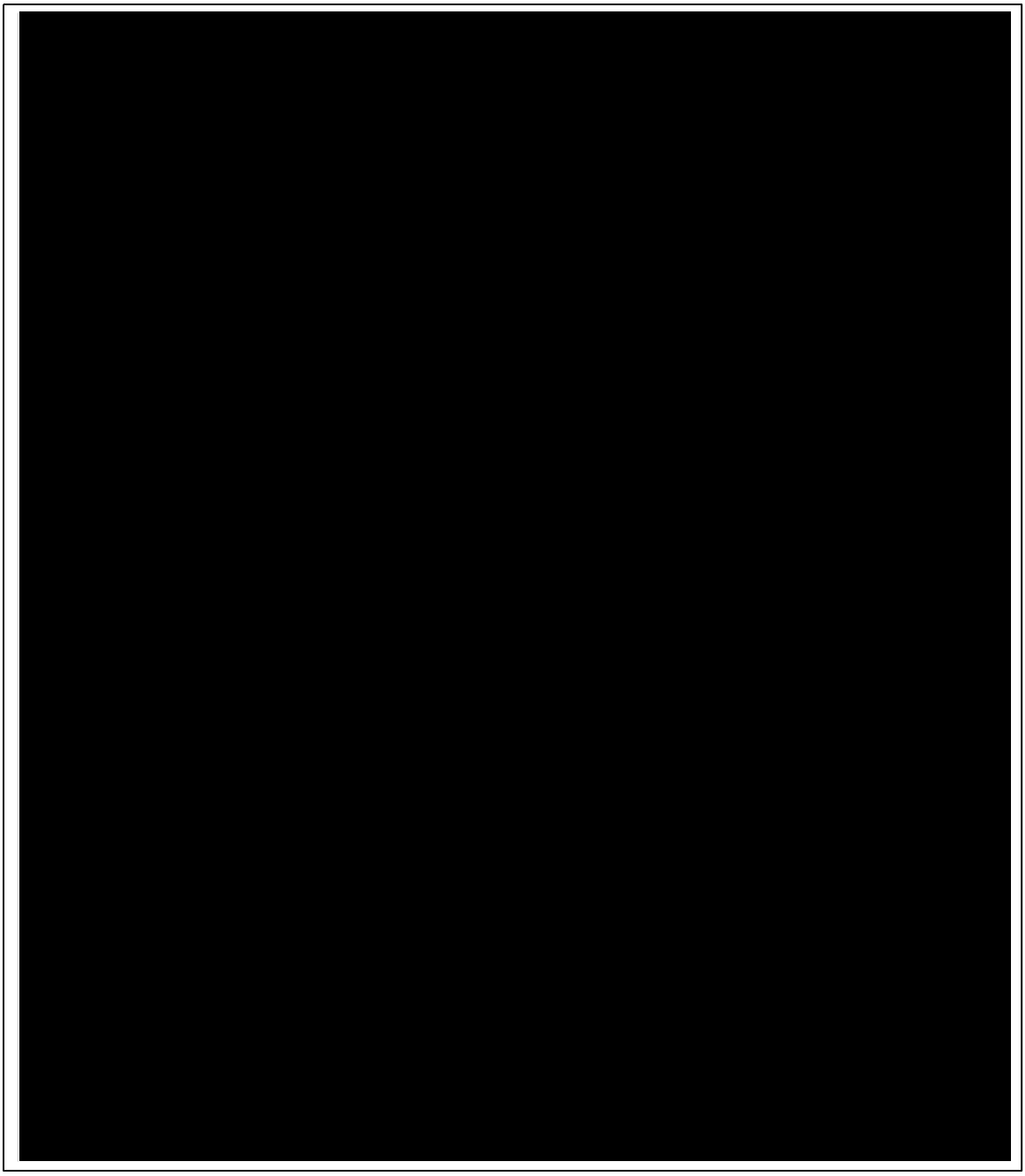


Figure 37: A portion of the USGS 7.5' [redacted], Indiana Quadrangle showing the location of Survey Area 4.

Artifacts

A total of 139 artifacts were encountered in Survey Area 4, but only 25 artifacts were collected as the rest (n=115) were uncollected brick fragments. Table 8 provides a list of the artifacts recovered by category. Sample artifacts are shown in Figure 38, Figure 39 and Figure 40. Artifacts are listed by individual site in Volume 2, Appendix E.

One prehistoric artifact was recovered. No diagnostic artifacts were recovered from the Prehistoric period in Survey Area 4.

One hundred and thirty nine historic artifacts were identified in Survey Area 4 and of the 24 collected, 23 are diagnostic. Chronologically expressed these items aqua glass recovered from sites 12-N-61 and 66 which was manufactured between 1800 to the 1920s (Horn 2005:1). Plain whiteware recovered from sites 12-N-61 and 66 which was manufactured from 1820 to present (Stelle 2001:Chapter I). Stoneware with Albany glaze interior and a Bristol glaze exterior recovered from site 12-N-62 which was manufactured from 1830 to 1940 (Stelle 2001:Chapter I). Plain ironstone recovered from site 12-N-61 which was manufactured between 1842 to 1930 (Miller 2000; Stelle 2001:Chapter I). Amber glass recovered from site 12-N- 65 which was manufactured between the 1860s to present (Horn 2005:1). Stoneware with Albany glaze interior and brown salt glaze exterior recovered from sites 12-N-61 which declined in popularity in the 1860s (Stelle 2001:Chapter I). Clear glass recovered from site 12-N-61 which was manufactured between 1875 to present (IMACS 1992:473). Amethyst glass recovered from sites 12-N-58, 59, 60, and 61 which was manufactured between 1885 to 1920 (Horn 2005:1). Cobalt glass recovered from site 12-N-64which was manufactured between the 1890s to present (Horn 2005:1). Stoneware with Albany glaze interior and exterior recovered from sites 12-N-61 and 62 which was manufactured with a termination date of 1940 (Stelle 2001:Chapter I).

Table 8: Artifacts from Survey Area 4.

Prehistoric	No.	Historic	No.
Core	1	Ceramic, Ironstone	3
		Ceramic, Whiteware	3
		Ceramic, Stoneware	4
		Glass, Amber	1
		Glass, Amethyst	4
		Glass, Aqua	5
		Glass, Blue/Cobalt	1
		Glass, Clear	2
		Brick Fragments	115
Total	**1**	**Total**	**138**

Figure 38: A core recovered from 12-N-61 in Survey Area 4 (photo by Felicia Konrad, Ball State University).

Figure 39: Representative historic ceramic artifacts from Survey Area 4 (photo by Felicia Konrad, Ball State University).

Figure 40: Representative historic glass artifacts from Survey Area 4 (photo by Felicia Konrad, Ball State University).

Sites

Ten archaeological sites, 12-N-58 to 67, were recorded in Survey Area 4 (Figure 41 and Figure 42). Summaries for the individual sites are contained in Volume 2, Appendix F. Eight sites had diagnostic artifacts (12-N-58, 59, 60, 61, 62, 64, 65, 66). One site contained an unidentified Prehistoric component. Seven sites were historic isolated finds (12-N-58, 59, 60, 62, 63, 64, and 65), two sites were historic scatters (12-N-66 and 67), and one site was a multicomponent site (12-N-61).

All 10 sites were discovered on till plain and moraines (12-N-58 to 67). One site was on Selma silt loam (Sg) soil (12-N-58), six sites were on Darroch silt loam (DcA) soil (12-N-59, 60, 61, 62, 63, and 67), and three sites were on Aubbeenaubbee-Whitaker complex (AuA) soil (12-N-64, 65, and 66).

12-N-61 and 12-N-67 contained a total of 115 brick fragments. No subsurface features were found. Three historic maps were consulted (Andreas 1876; Geo. A. Ogle & Co 1916: Taylor 2009:59) and no historic structures were noted near these sites. The site types found in Survey Area 4 are typically considered to not have the potential to yield additional information

beyond the Phase I level and are therefore not considered eligible for the National Register of Historic Places.

Density

Survey Area 4 consisted of approximately 126.73 acres of till plain and moraines. Within Survey Area 4, a density of one site per 12.673 acres occurred and sites covered 1.59 percent of the surface area.

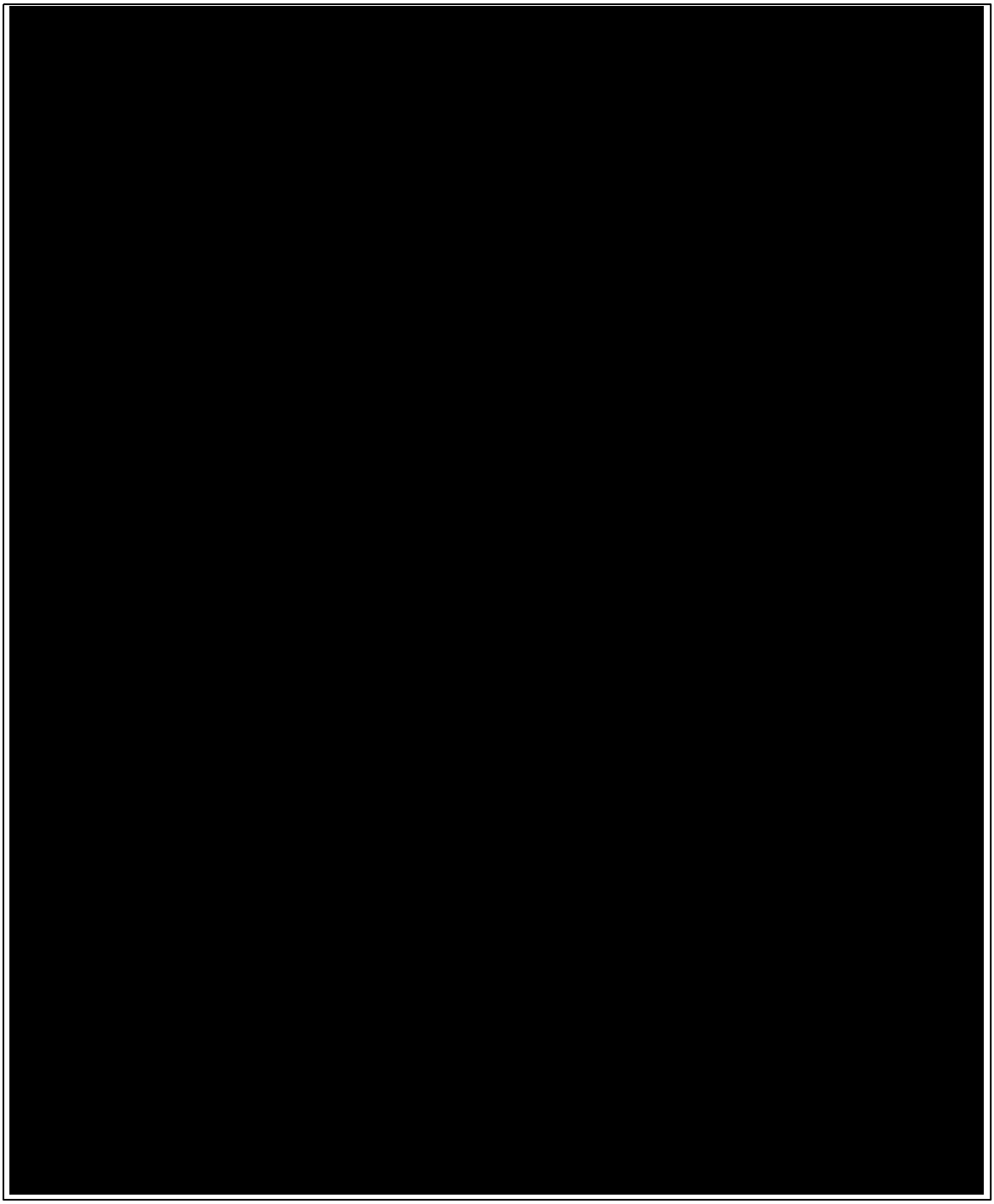


Figure 41: A portion of the USGS 7.5' [redacted], Indiana Quadrangle showing the location of sites 12-N-58 to 67.

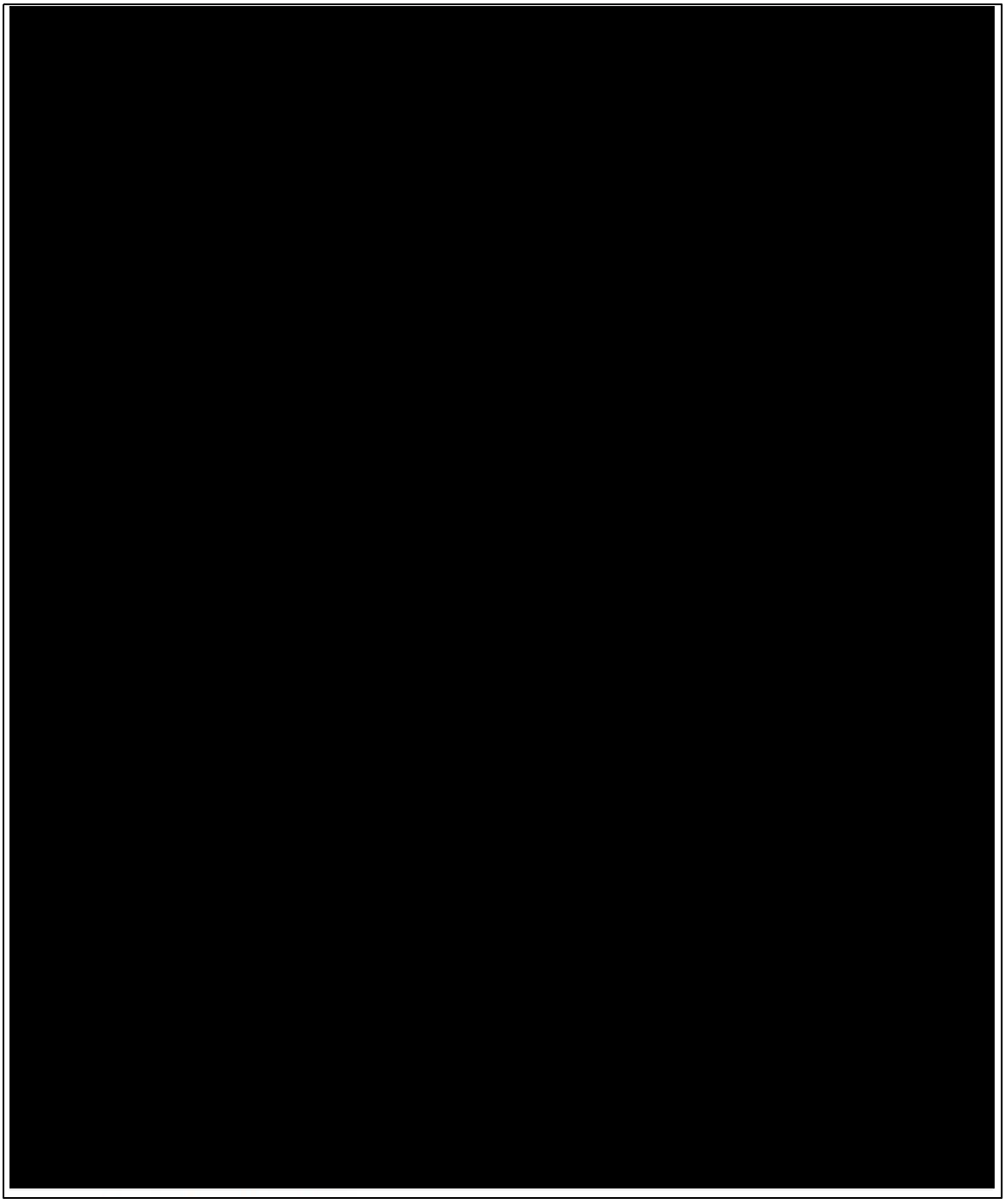


Figure 42: 2011 Aerial (Indiana Data Spatial Service) showing the location of sites 12-N-58 to 67.

Survey Area 5

Survey Area 5 was located in [redacted] Township in [redacted] as shown on the [redacted] County map in the "Illustrated Historical Atlas of the State of Indiana" (Andreas 1968) and the USGS 7.5' [redacted] Quadrangle (Figure 43 and Figure 44). The property was surveyed on September 14, 2014. This field operates as a seed plot and as such had every fourth row of corn (male plants) removed mid-season. The row removal was coupled with the removal of the top of the remaining standing corn leaving it approximately four to five feet high. These two factors led to excellent visibility and field conditions. Ground surface visibility was approximately 75 percent with small amounts of corn debris, and the corn stalks themselves being the only visual obstacles. Approximately 158.07 acres were surveyed consisting of till plain and moraines. The area contained Barce-Corwin (BbA), Foresman (FtA), Gilboa-Odell (GbA), Glenhall (GhB), Onarga (OnA), Ridgeville (RtA), and Selma (Sk) soils. Twenty six sites were encountered during the survey. The sites ranged in size from prehistoric and historic isolated finds to a very large historic scatter of 18,807.54 square meters (4.65 acres).

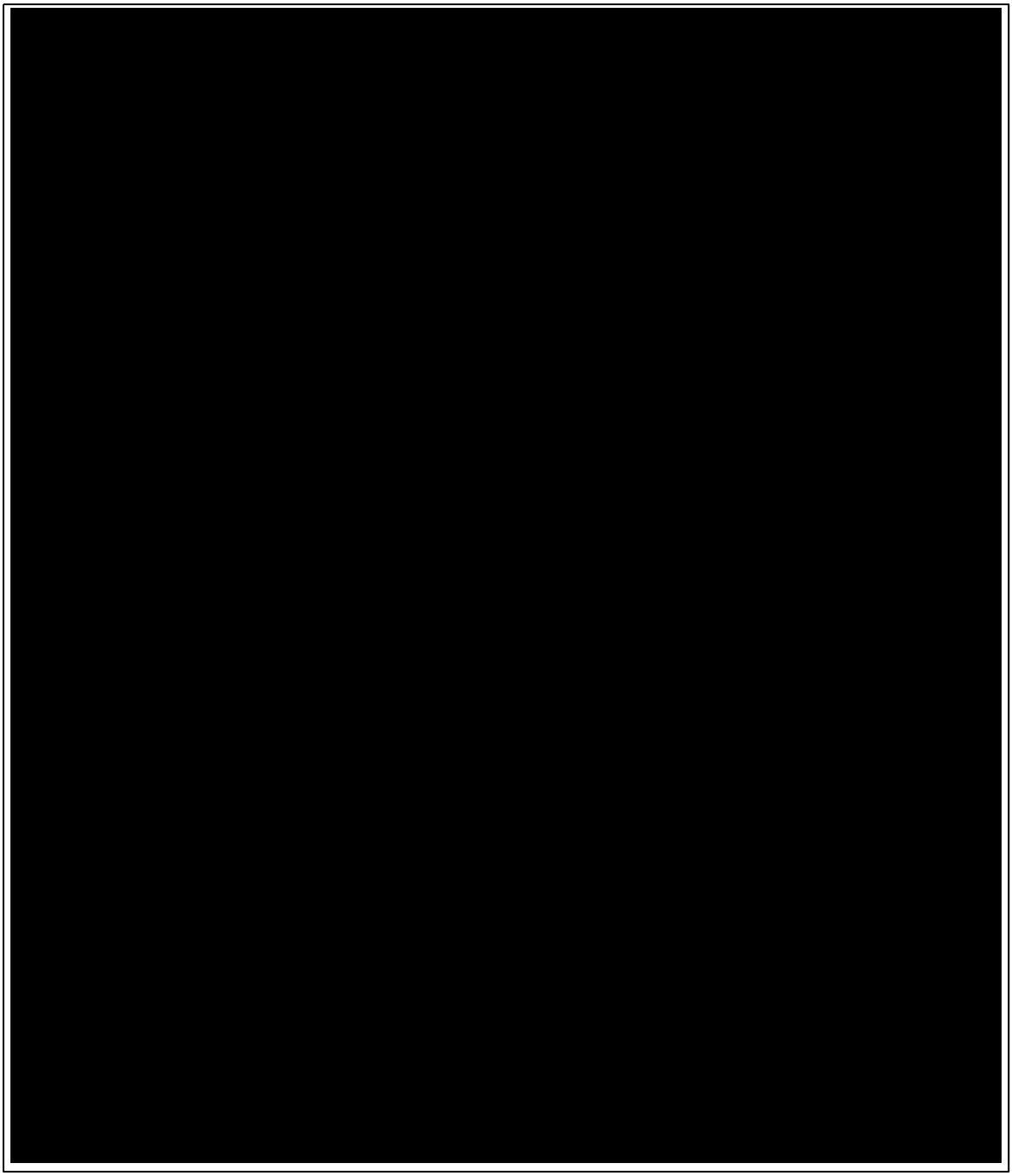


Figure 43: A portion of the map of [redacted] Township, Newton County in the "Illustrated Historical Atlas of the State of Indiana" (Andreas 1968) showing Survey Area 5.

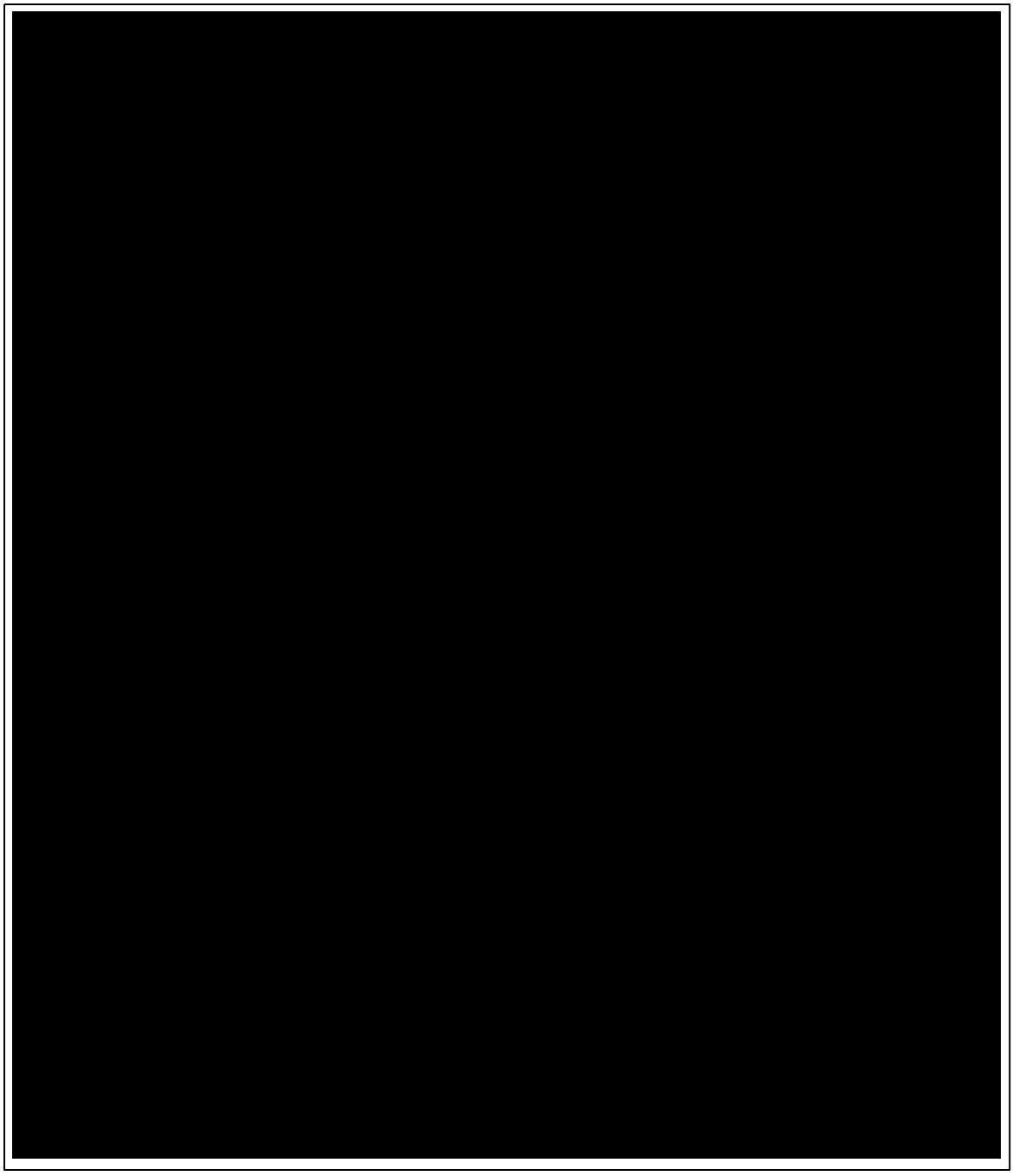


Figure 44: A portion of the USGS 7.5' [redacted], Indiana Quadrangle showing the location of Survey Area 5.

Artifacts

A total of 627 artifacts were encountered in Survey Area 5. Table 9 provides a list of the artifacts recovered by category. Sample artifacts are shown in Figure 45 through Figure 53. Artifacts are listed by individual site in Volume 2, Appendix E.

Twenty-nine prehistoric artifacts were recovered. One diagnostic prehistoric artifact was recovered from Survey Area 5 (Figure 45). It dates to the Late Archaic period and is a heat-treated Brewerton Side-Notched recovered from site 12-N-75 (Justice 2006:115-116,119-121).

Five hundred and ninety eight historic artifacts were recovered from Survey Area 5 and of those, four hundred and twenty one are diagnostic. Chronologically expressed these items include redware recovered from site 12-N-90 which was manufactured between 1725 to present (Stelle 2001:Chapter I). Plain porcelain recovered from sites 12-N-88 and 90 which were manufactured between 1745 and 1850 (Stelle 2001:Chapter I). A lath nail recovered from site 12-N-90 which was manufactured between 1790 to 1810 (Nelson 1964). Aqua glass recovered from sites 12-N-68, 71, 79, 85, 88, 90, and 91 which was manufactured between 1800 to the 1920s (Horn 2005:1). Decorated Ironstone recovered from site 12-N-90 which was manufactured from 1800 to circa 1840 (Majewski and O'Brien 1987: 120-123). Blue transferprint whiteware recovered from site 12-N-90 which was manufactured from 1820 to 1860 (Stelle 2001:Chapter I). Plain whiteware recovered from sites 12-N-69, 71, 81, 82, 90, and 91 which was manufactured from 1820 to present (Stelle 2001:Chapter I). Yelloware with Rockingham-Bennington glaze recovered from site 12-N-91 which was manufactured between 1830 to 1900 (ODOT 1991:177). Stoneware with Albany glaze interior and a Bristol glaze exterior recovered from sites 12-N-71 and 90 which was manufactured from 1830 to 1940 (Stelle 2001:Chapter I). Stoneware with Bristol glaze interior and exterior recovered from site 12-N-90 which was manufactured between 1835 to present (Stelle 2001:Chapter I). Purple and green decal whiteware recovered from site 12-N-90 which was manufactured between 1840 to present (ODOT 1991:178). Plain ironstone recovered from sites 12-N-70, 73, 88, and 90 which was manufactured between 1842 to 1930 (Miller 2000; Stelle 2001:Chapter I). A Prosser button recovered from site 12-N-90 which was patented in 1849 (IMACS 2001:475). Industrial porclelain and porcelain insulators recovered from sites 12-N-84 and 90 which were manufactured between 1850 to present (ODOT 1991:177). Amber glass recovered from site 12-N-90 which was manufactured between the 1860s to present (Horn 2005:1). Green glass recovered from site 12-N-90 which was manufactured between the 1860s to present (Horn 2005:1). Red/Pink glass recovered from site 12-N-71 which was manufactured from 1875 to present (IMACS 1984:473). Clear glass recovered from sites 12-N-70, 71, 80, 86, 88, 90, 92, and 93 which was manufactured between 1875 to present (IMACS 1992: 473). Amethyst glass recovered from sites 12-N-71 and 90 which was manufactured from1885 to 1920 (Horn 2005:1). Cobalt glass recovered from site 12-N-90 which was manufactured between the 1890s to present (Horn 2005: 1). Milk glass recovered from sites 12-N-71, 83, 90, and 91 which was

manufactured between the 1890s to present (Horn 2005:1). A Remington Express shotgun shell recovered from site 12-N-90 which was manufactured between the early 1900s to present (Standler 2006). Yellow glass recovered from site 12-N-90 which was manufactured between 1918 to the 1920s (Horn 2005:1). Stoneware with Albany glaze interior and exterior recovered from sites 12-N-71 and 90 which was manufactured with a termination date of 1940 (Stelle 2001:Chapter I). Stoneware with Albany glaze interior and salt glaze exterior recovered from site 12-N-90 which was manufactured with a termination date of 1940 (Stelle 2001:Chapter I). Whiteware with a red edge recovered from site 12-N-71 which was popular during the early 20th century (Majewski and O'Brien 1987:160).

Table 9: Artifacts from Survey Area 5.

Prehistoric	No.	Historic	No.
Biface, Hafted, Brewerton Side-Notched	1	Ceramic, Porcelain	17
Biface, Hafted, Unidentified	1	Ceramic, Redware	2
Biface, Unhafted	1	Ceramic, Ironstone	19
Flake, Proximal	12	Ceramic, Whiteware	60
Flake, Shatter	7	Ceramic, Stoneware	48
Flake, Distal	2	Ceramic, Yelloware	1
Flake, Blade-like	1	Ceramic, Prosser Button	1
Core	1	Glass, Amber	13
Groundstone Tool	2	Glass, Amethyst	28
		Glass, Aqua	116
		Glass, Cobalt	2
		Glass, Clear	84
		Glass, Green	4
		Glass, Marble	1
		Glass, Milk	32
		Glass, Red/Pink	1
		Glass, Yellow	1
		Metal, Iron	15
		Metal, Tin	1
		Metal, Zinc/Copper	4
		Brick	2
		Coal	14
		Slag	132
Total	**29**	**Total**	**598**

Figure 45: A Brewerton Side-Notched diagnostic point from 12-N-75 (photo by Felicia Konrad, Ball State University).

Figure 46: Unhafted Biface with fossil impression recovered from 12-N-90 in Survey Area 5 (photo by Felicia Konrad, Ball State University).

Figure 47: Representative historic ceramic artifacts from Survey Area 5 (photo by Felicia Konrad, Ball State University).

Figure 48: Representative historic ceramic artifacts from Survey Area 5 (photo by Felicia Konrad, Ball State University).

Figure 49: Representative historic glass artifacts from Survey Area 5 (photo by Felicia Konrad, Ball State University).

Figure 50: Representative historic glass artifacts from Survey Area 5 (photo by Felicia Konrad, Ball State University).

Figure 51: Representative historic metal artifacts from Survey Area 5 (photo by Felicia Konrad, Ball State University).

Figure 52: Glass fragment impressed "Bottling Works Lafayette" recovered from 12-N-91 in Survey Area 5 (photo by Felicia Konrad, Ball State University).

Figure 53: Metal cat figurine recovered from 12-N-93 in Survey Area 5 (photo by Felicia Konrad, Ball State University).

Sites

Twenty six archaeological sites, 12-N-68 to 93), were recorded in Survey Area 5 (Figure 54 and Figure 55). Summaries for the individual sites are contained in Volume 2, Appendix F. Twenty sites had diagnostic artifacts (12-N-68, 69, 70, 71, 73, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 90, 91, 92, and 93). Six of the sites were prehistoric isolated finds (12-N-72, 74, 75, 77, 78, and 89). Eleven sites were historic isolated finds (12-N-69, 73, 76, 79, 80, 81, 82, 84, 85, 86, and 92) and seven sites were historic scatters (12-N-70, 71, 87, 88, 91, and 93). Four sites were multicomponent sites (12-N-68, 82, 83, and 90).

All 26 sites were found on till plains and moraines (12-N-68 to 93). One site was found on Barce-Corwin complex (BbA) soil (12-N-68), two sites were found on Gilboa-Odell complex (GbA) soil (12-N-76 and 82), two sites were found on Foresman silt loam (FtA) soil (12-N-69 and 79), twelve sites were found on Selma silty clay loam (Sk) soil (12-N-70, 72, 74, 75, 77, 78, 80, 81, 84, 85, 86, and 89), one site was found on Ridgeville fine sandy loam (RtA) soil (12-N-87), one site was found on Onarga fine sandy loam (OnA) soil (12-N- 92), and two sites were found on Glenhall loam (GhB) soil (12-N-91, and 93). Five sites were found on multiple soil types. One site was found on Ridgeville fine sandy loam and Barce-Corwin complex (RtA and BbA) soils (12-N-71), two sites were found on Gilboa-Odell complex and Selma silty clay loam (GbA ana Sk) soils (12-N-73 and 83), one site was found on Onarga fine sandy loam and Selma

silty clay loam (OnA ans Sk) soils (12-N-88), and one site was found on Gilboa-Odell complex, Glenhall loam, and Selma silty clay loam (GbA, GhB, and Sk) soils (12-N-90).

The majority of site types found in Survey Area 5 are typically considered to not have the potential to yield additional information beyond the Phase I level and are therefore not considered eligible for the National Register of Historic Places. However, one site within the survey area (12-N-90) is recommended for further study due to the high number and density of historic artifacts found. 12-N-90 is located just west of County Road S 350 E and approximately 1,000 meters north of County Road E 1550 S. There are no historic or modern structures located near the scatter as indicated on historic maps (Andreas 1968; Geo. A. Ogle & Co 1916; Taylor 2009:67); however, County Road 350 E directly east of 12-N-90 cuts through Section 15 rather than following the section boundaries as normally expected (USGS 7.5' Grant, Indiana Quadrangle). This alignment of CR 350 E could be indicative of the roads leading to an area of economic importance in the area that predates the 1876 Atlas or that was not recorded on the atlas (Andreas 1968). There were no subsurface features observed in the survey area, which could indicate 12-N-90 is a secondary deposit; however, a structure cannot be ruled out at this stage of investigation. The location of the road, the gentle sloping of the topography, and the location of the scatter on the highest flat surface in the Survey Area represent favorable conditions for a possible structure or other historic activity area located on the site. The size of the scatter is 18,807.54m^2, and the variety of the artifacts recovered with ends date in the mid-1800s, along with the atypical road placement pattern could indicate the potential to yield additional important information on the early settlement and economic activity of 19th Century Newton County beyond the Phase I level and therefore considered potentially eligible for the National Register of Historic Places.

Density

Survey Area 5 consisted of approximately 158.07 acres of till plain and moraines. Within Survey Area 5, a density of one site per 6.71 acres occurred and sites covered 16.45 percent of the surface area.

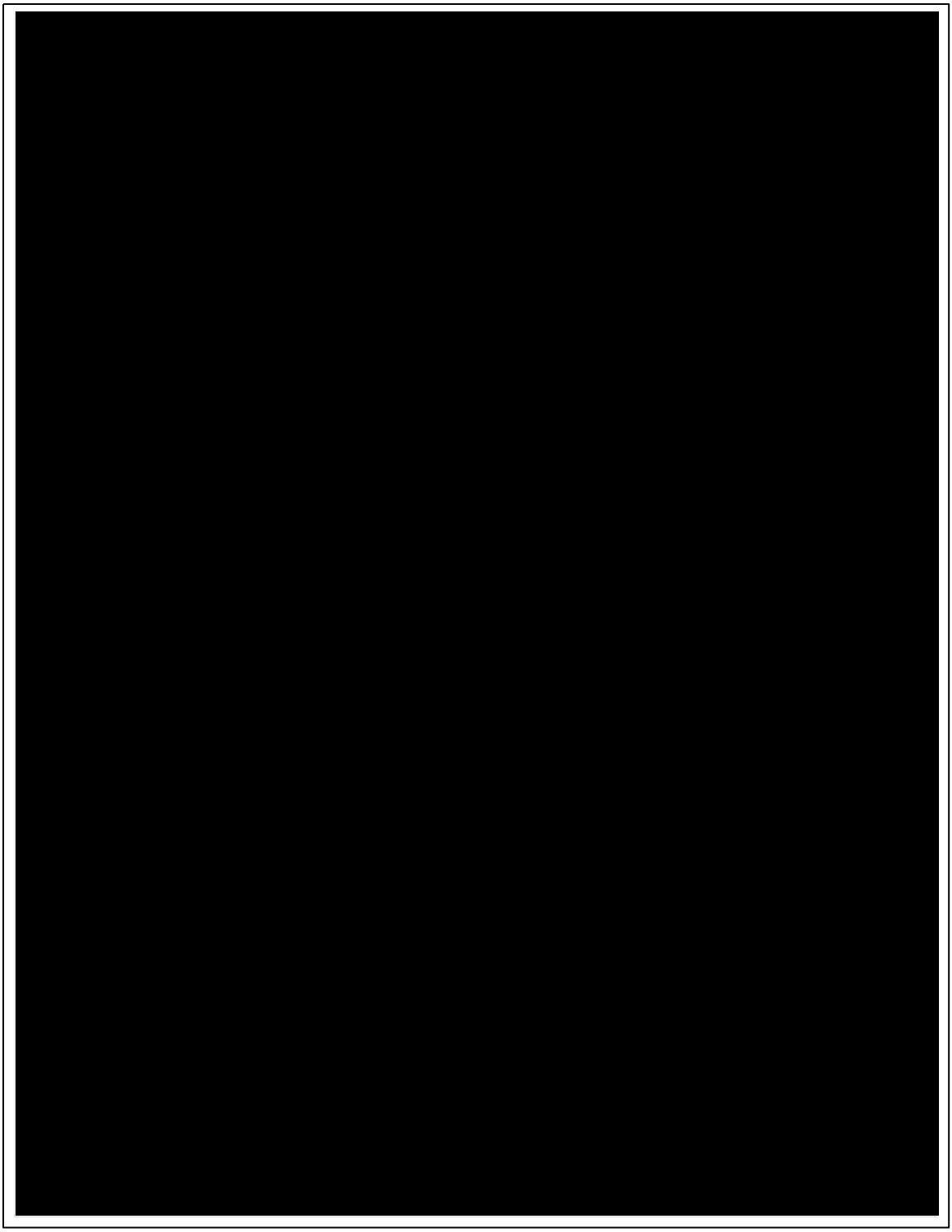


Figure 54: A portion of the USGS 7.5' [redacted], Indiana Quadrangle showing the location of sites 12-N-68 to 93.

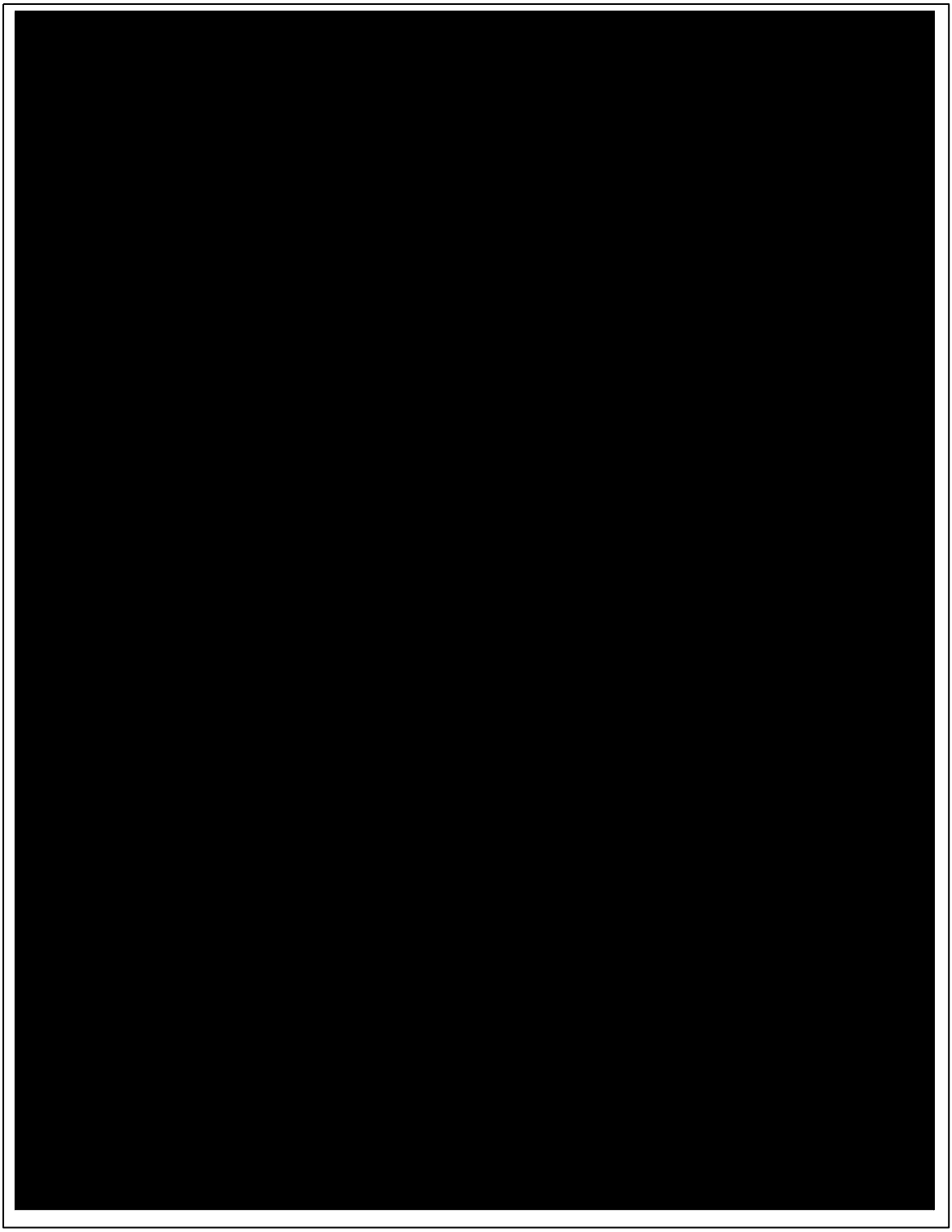


Figure 55: 2011 Aerial (Indiana Data Spatial Service) showing the location of sites 12-N-68 to 93

Survey Area 6

Survey Area 6 was located in [redacted] Township in [redacted] as shown on the Newton County map in the "Illustrated Historical Atlas of the State of Indiana" (Andreas 1968) and the USGS 7.5' [redacted] Quadrangle (Figure 56 and Figure 57). The property was surveyed on September 26, 2014. This field operates as a seed plot and as such had every fourth row of corn (male plants) removed mid-season. The row removal was coupled with the removal of the top of the remaining standing corn leaving it approximately four to five feet high. These two factors led to excellent visibility and field conditions. Ground surface visibility was approximately 70 to 80 percent with small amounts of corn debris, and the corn stalks themselves being the only visual obstacles. Approximately 68.82 acres were surveyed consisting of till plains/moraines. The area consisted of Barce-Corwin (BbA), Gilboa-Odell (GbA), and Selma (Sk) soils. Twenty sites were encountered during the survey. The sites ranged in size from prehistoric and historic isolated finds to a historic scatter of 2,063.43 square meters (0.51 acres).

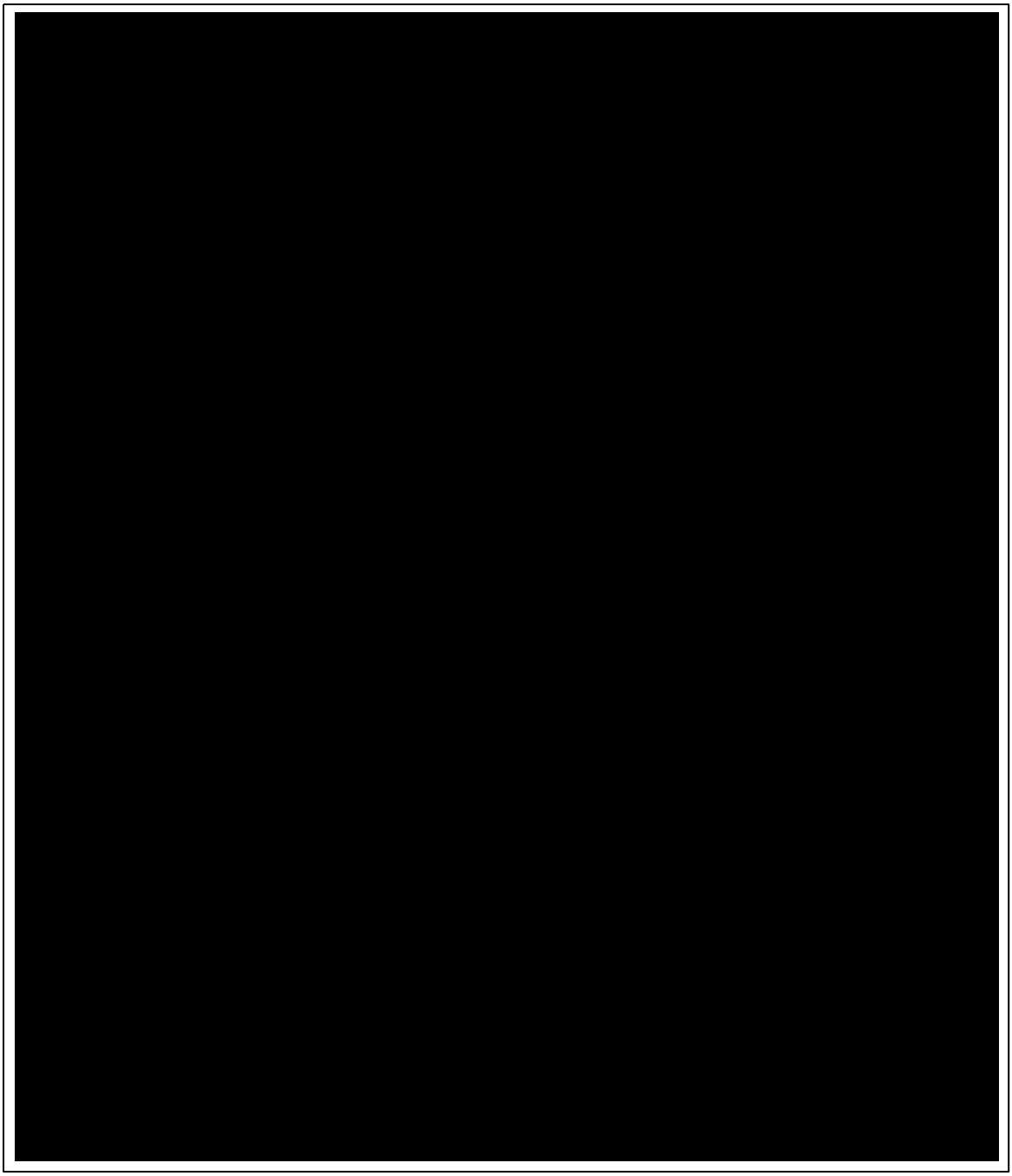


Figure 56: A portion of the map of [redacted] Township, Newton County in the "Illustrated Historical Atlas of the State of Indiana" (Andreas 1968) showing Survey Area 6.

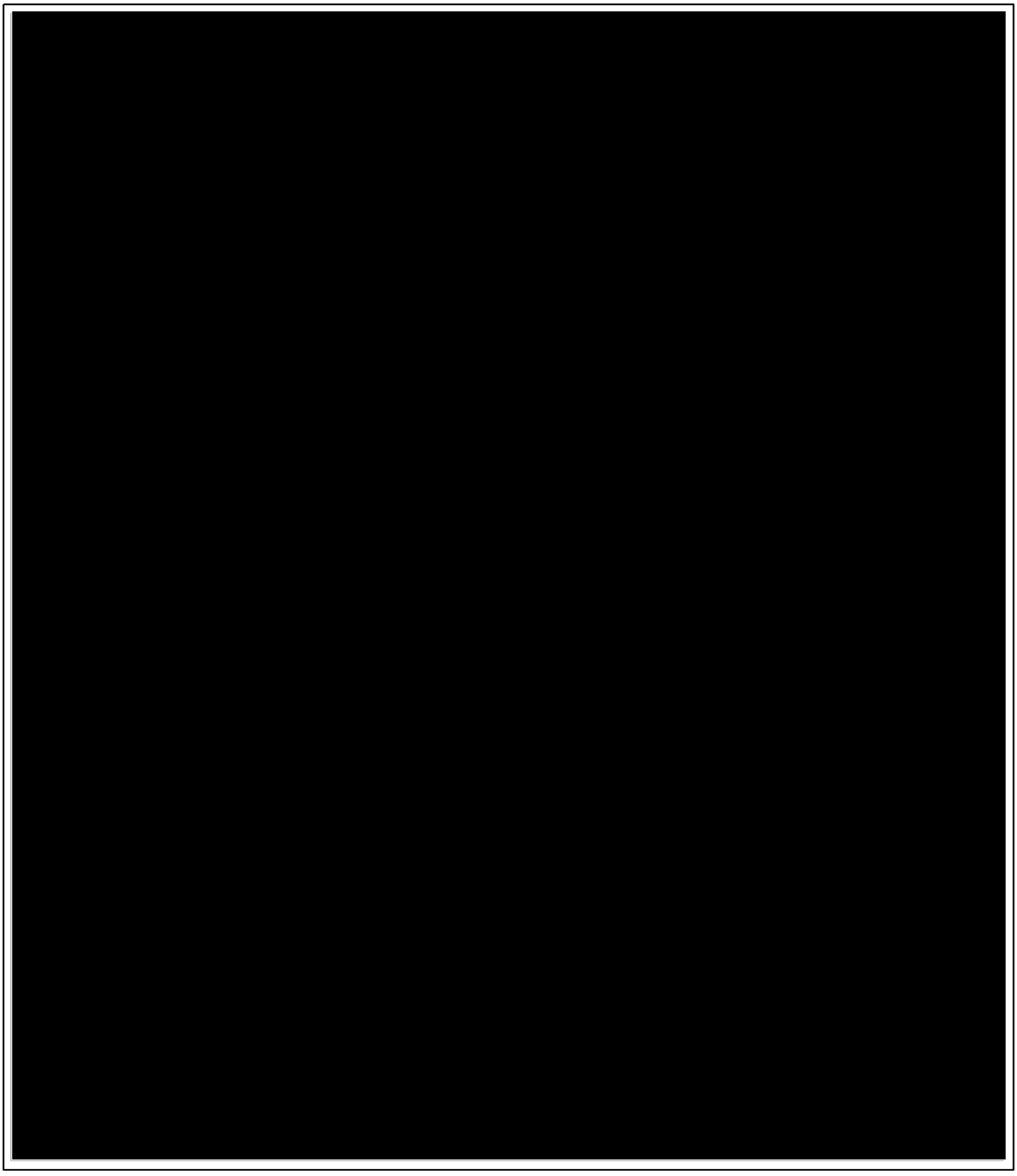


Figure 57: A portion of the USGS 7.5' [redacted], Indiana Quadrangle showing the location of Survey Area 6.

Artifacts

A total of 37 artifacts were encountered in Survey Area 6. Table 10 provides a list of the artifacts recovered by category. Sample artifacts are shown in Figure 58, Figure 59 and Figure 60. Artifacts are listed by individual site in Volume 2, Appendix E.

Two prehistoric artifacts were recovered. No diagnostic prehistoric artifacts were recovered from Survey Area 6.

Thirty five historic artifacts were recovered from Survey Area 2 and of those, 32 are diagnostic. Chronologically expressed these items include aqua glass recovered from sites 12-N-265, 269, and 274 which was manufactured between 1800 to the 1920s (Horn 2005:1). Plain whiteware recovered from site 12-N-263 which was manufactured from 1820 to present (Stelle 2001:Chapter I). Stoneware with Albany glaze interior and a Bristol glaze exterior recovered from site 12-N-95 which was manufactured from 1830 to 1940 (Stelle 2001:Chapter I). Stoneware with Bristol glaze interior and exterior recovered from sites 12-N-264 and 279 which was manufactured between 1835 to present (Stelle 2001:Chapter I). Amber glass recovered from sites 12-N-94, 263, 268, 271, 272, and 277 which was manufactured between the 1860s to present (Horn 2005:1). Green glass recovered from site 12-N-271 which was manufactured between the 1860s to present (Horn 2005:1). Clear glass recovered from sites 12-N-94, 266, 267, 268, 271, 272, 275, and 276 which was manufactured between 1875 to present (IMACS 1992:473). Cobalt glass recovered from site 12-N-273 which was manufactured between the 1890s to present (Horn 2005:1). Milk glass recovered from sites 12-N-38, 42, and 47 which was manufactured between the 1890s to present (Horn 2005:1). Stoneware with Albany glaze interior and exterior recovered from site 12-N-94 which was manufactured with a termination date of 1940 (Stelle 2001:Chapter I).

Table 10: Artifacts from Survey Area 6.

Prehistoric	No.	Historic	No.
Biface, Unidentified	1	Glass, Amber	9
Flake, Tool	1	Glass, Aqua	3
		Glass, Clear	13
		Glass, Cobalt	1
		Glass, Green	1
		Ceramic, Whiteware	1
		Ceramic, Stoneware	5
		Coal	1
		Fiberglass/Asbestos	1
Total	**2**	**Total**	**35**

Figure 58: An unidentified point from site 12-N- 273 (photo by Felicia Konrad, Ball State University).

Figure 59: Representative historic ceramic artifacts from Survey Area 6 (photo by Felicia

Konrad, Ball State University).

Figure 60: Representative historic glass artifacts from Survey Area 6 (photo by Felicia Konrad, Ball State University).

Sites

Twenty archaeological sites, 12-N-94 to 95 and 262 to 279, were recorded in Survey Area 6 (Figure 61 and Figure 62). Summaries for the individual sites are contained in Volume 2, Appendix F. Eighteen sites had diagnostic artifacts (12-N-94, 95, 263, 264, 265, 266, 267, 268, 269, 271, 272, 273, 274, 275, 276, 277, 278, and 279). One site was a prehistoric isolated find (12-N-270). Twelve sites were historic isolated finds (12-N-95, 262, 264, 265, 266, 269, 274, 275, 276, 277, 278, and 279), six sites were historic scatters (12-N-94, 263, 267, 268, 271, and 272), and one site was a multicomponent site (12-N-273).

All twenty sites were discovered on till plain and moraines (12-N-94, 95, and 262 to 279). Five sites were found on Barce-Corwin complex (BbA) soil (12-N-265, 267, 270, 271, and 272), ten sites were found in Selma silty clay loam (Sk) soil (12-N-95, 263, 264, 266, 269, 274, 276, 277, 278, and 279), and one site was found on Gilboa-Odell complex (GbA) soil (12-N-262). Four sites were found on multiple soil types. Three sites were found on Barce-Corwin complex and Selma silty clay loam (BbA and Sk) soils (12-N-94, 273, and 275) and one site as found on Gilboa-Odell complex and Selma silty clay loam (GbA and Sk) soils (12-N-268)

The site types found in Survey Area 6 are typically considered to not have the potential to yield additional information beyond the Phase I level and are therefore not considered eligible for the National Register of Historic Places.

Density

Survey Area 6 consisted of approximately 68.82 acres of till plains and moraines. Within Survey Area 6, a density of one site per 3.44 acres occurred and sites covered 6.63 percent of the surface area.

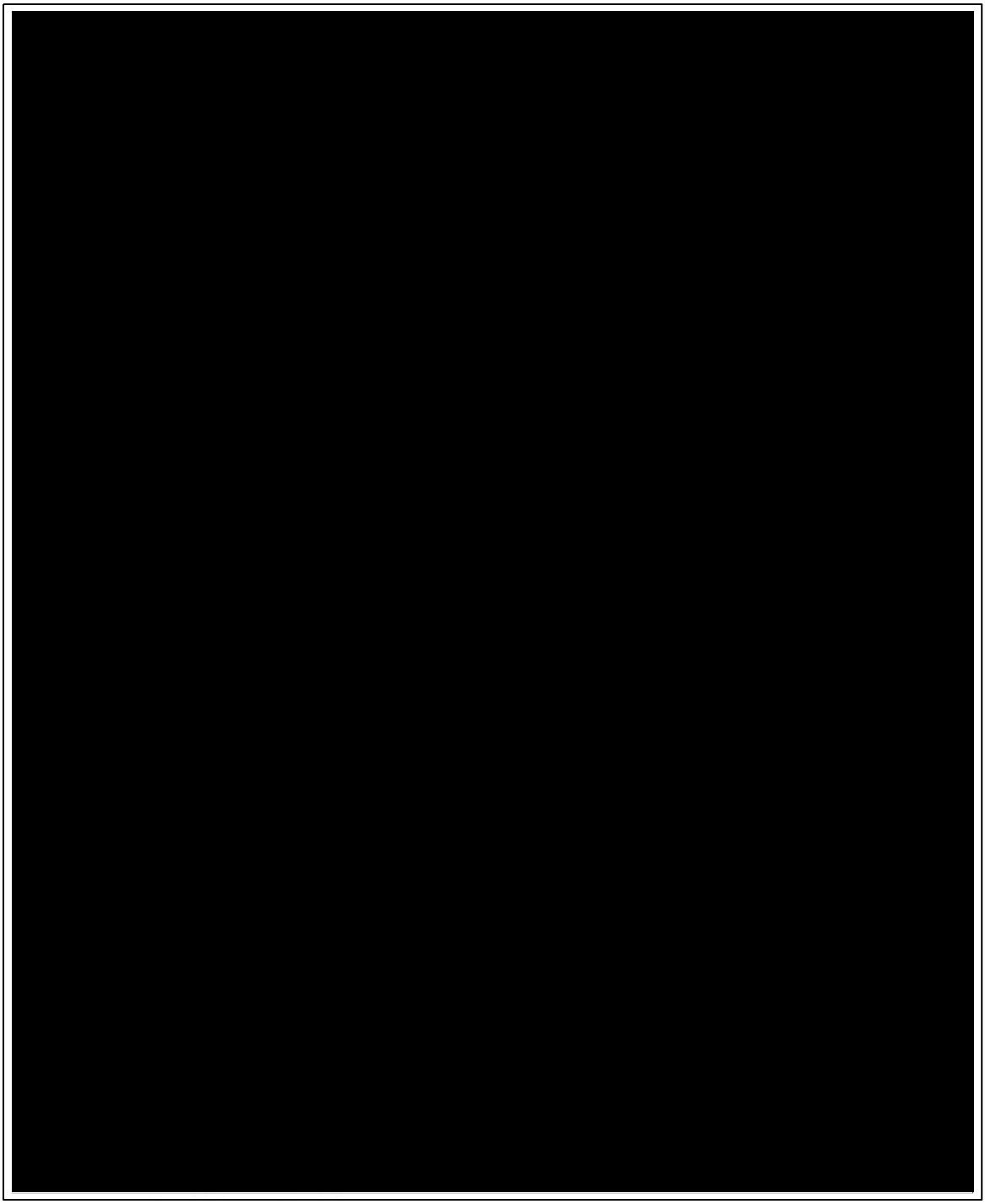


Figure 61: A portion of the USGS 7.5' [redacted], Indiana Quadrangle showing the location of sites 12-N-94 to 95 and 12-N-262 to 279.

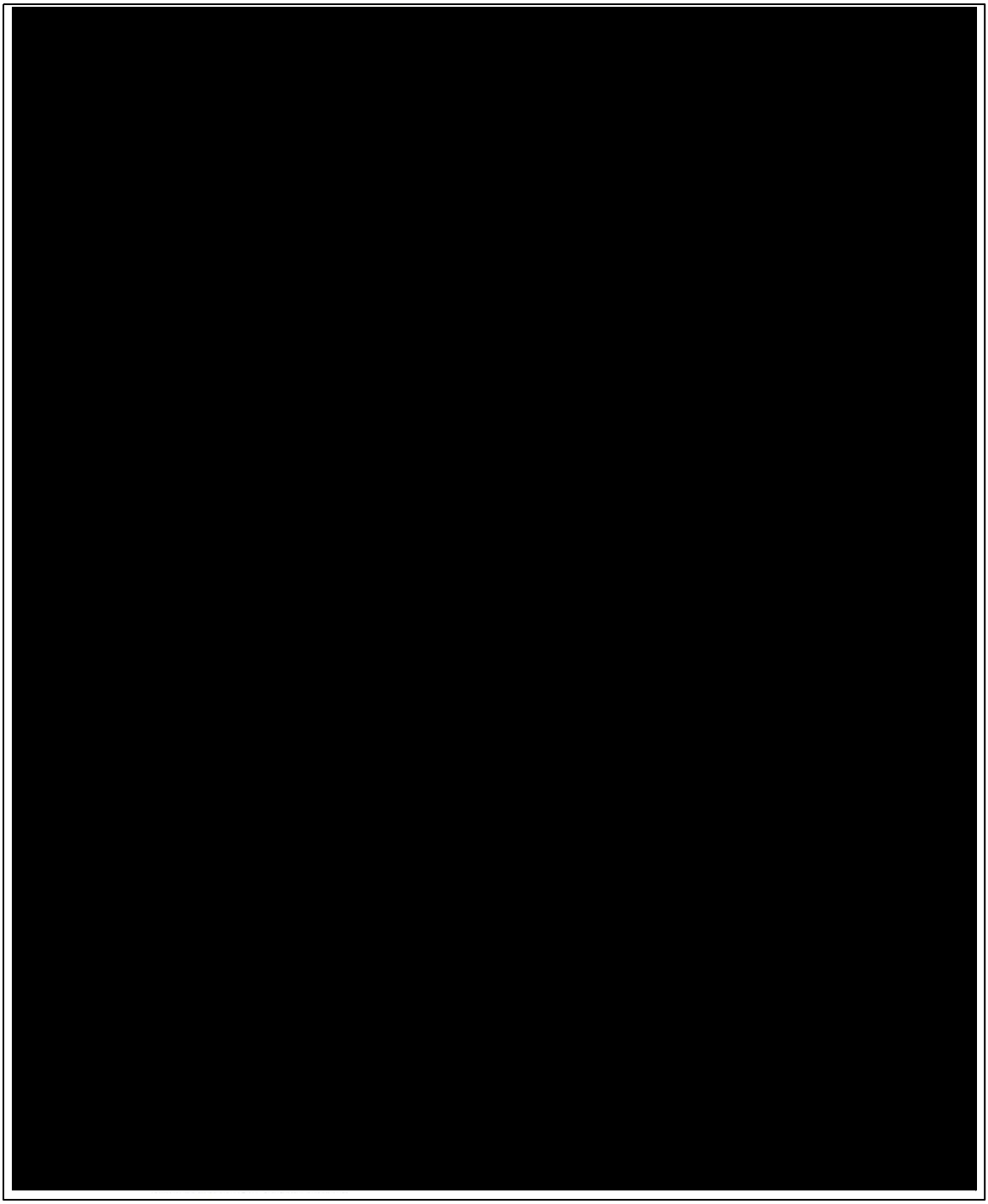


Figure 62: 2011 Aerial (Indiana Data Spatial Service) showing the location of sites 12-N-94 to 95 and 12-N-262 to 279.

Survey Area 7

Survey Area 7 was located in [redacted] Township in [redacted] as shown on the Newton County map in the "Illustrated Historical Atlas of the State of Indiana" (Andreas 1968) and the USGS 7.5' [redacted] Quadrangle (Figure 64 and Figure 65). The property was surveyed on October 11, 2014. The fields were planted in corn that was standing between seven to 10 feet tall. Ground surface visibility was approximately 100 percent with small amounts of corn debris and the corn stalks themselves being the only visual obstacles. Approximately 88.46 acres were surveyed consisting of till plain and moraines. The area contained Barry-Gilford (Bh), Darroch (DcA and DdA), Elston (EsB), Foresman (FoA and FrB2), Glenhall (GhB), Houghton (Ho), Iroquois (Ir), Nesius (NsB), Octagon-Ayr (OkB2), Onarga (OnB2), Papineau (PaA), Selma (Sg and Sh), Sparta (SrB), and Wallkill (Wa) soils. Twelve sites were encountered during the survey. The sites ranged in size from prehistoric and historic isolated finds to a large historic scatter of 8,746.98 square meters (2.16 acres).

The landowner [redacted] met the survey crew at Survey Area 7 to point out the location of his fields. He pointed out additional parcels that he owned surrounding Survey Area 7, however the majority of these fields were planted with mature beans and were not surveyable. [redacted] has collected in all of his fields; collected artifacts included a stemmed point with slight corner notching that is most likely Late Archaic and an axe (Figure 63).

Figure 63: Stemmed point and axe from [redacted] collection, found near Survey Area 7.

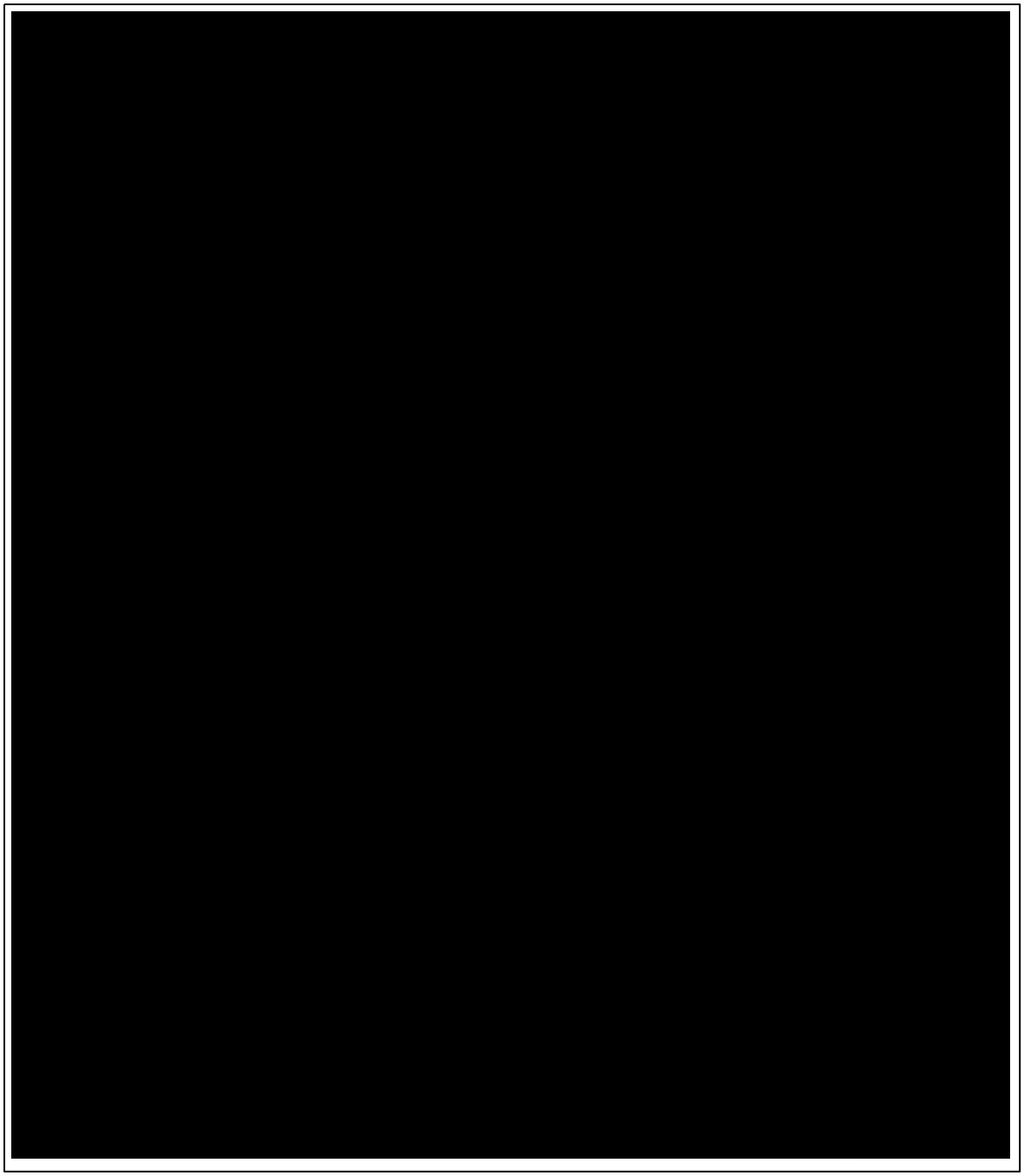


Figure 64: A portion of the map of [redacted] Township, Newton County in the "Illustrated Historical Atlas of the State of Indiana" (Andreas 1968) showing Survey Area 7.

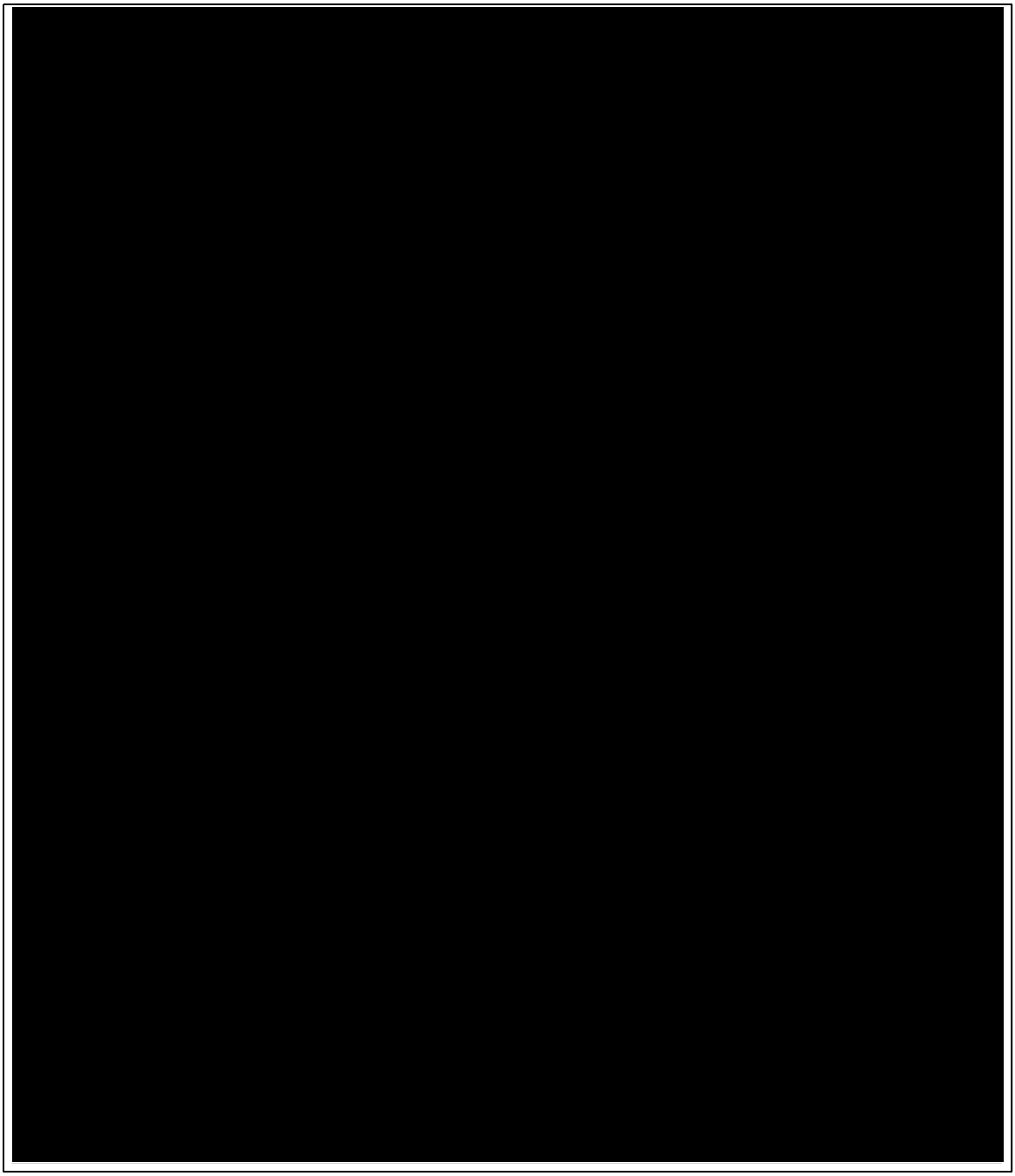


Figure 65: A portion of the USGS 7.5' [redacted], Indiana Quadrangle showing the location of Survey Area 7.

Artifacts

A total of 352 artifacts were encountered in Survey Area 7. Table 11 provides a list of the artifacts recovered by category. Sample artifacts are shown in Figure 66 through Figure 71. Artifacts are listed by individual site in Volume 2, Appendix E.

Thirteen prehistoric artifacts were recovered. One diagnostic prehistoric artifact was recovered from Survey Area 7 (Figure 66). A hafted Matanzas Side-Notched biface dating to the Late Archaic period was recovered from site 12-N-284 (Justice 2006:119-121).

Three hundred and thirty nine historic artifacts were recovered from Survey Area 2 and of those, two hundred and twenty are diagnostic. Chronologically expressed these items include redware recovered from site 12-N-281 which was manufactured between 1725 to present (Stelle 2001:Chapter I). Plain porcelain recovered from sites 12-N-281 and 289 which were manufactured between 1745 and 1850 (Stelle 2001:Chapter I). Creamware recovered from site 12-N-281 which was manufactured from 1762 to 1820 (Lofstrom et al 1982:14; ODOT 1991:178). Aqua glass recovered from sites 12-N-281 and 285 which was manufactured between 1800 to the 1920s (Horn 2005:1). Blue transferprint Ironstone recovered from site 12-N-281 which was manufactured from 1800 to circa 1840 (Majewski and O'Brien 1987:120-123). Blue transferprint whiteware recovered from site 12-N-287 which was manufactured from 1820 to 1860 (Stelle 2001:Chapter I). Plain whiteware recovered from sites 12-N-281 and 287 which was manufactured from 1820 to present (Stelle 2001:Chapter I). Yelloware with Rockingham-Bennington glaze recovered from site 12-N-281 which was manufactured from 1830 to 1900 (ODOT 1991:177). Stoneware with Albany glaze interior and a Bristol glaze exterior recovered from site 12-N-281 which was manufactured from 1830 to 1940 (Stelle 2001:Chapter I). Stoneware with Bristol glaze interior and exterior recovered from site 12-N-281 which was manufactured between 1835 to present (Stelle 2001:Chapter I). Plain ironstone recovered from sites 12-N-281 and 283 which was manufactured between 1842 to 1930 (Miller 2000; Stelle 2001:Chapter I). Porcelain insulator recovered from site 12-N-289 which was manufactured between 1850 to present (ODOT 1991:177). Amber glass recovered from sites 12-N-281 and 288 which was manufactured between the 1860s to present (Horn 2005:1). Green glass recovered from sites 12-N-281 and 282 which was manufactured between the 1860s to present (Horn 2005:1). Clear glass recovered from sites 12-N-281 and 282 which was manufactured between 1875 to present (IMACS 1992:473). Amethyst glass recovered from sites 12-N-281 and 286 which was manufactured between 1885 to 1920 (Horn 2005:1). Semi-Porcelain recovered from site 12-N-281 which was manufactured between 1890 to present (ODOT 1991:177). Cobalt glass recovered from site 12-N-281 which was manufactured between the 1890s to present (Horn 2005:1). Milk glass recovered from sites 12-N-51, 281 and 283 which was manufactured between the 1890s to present (Horn 2005:1). Gray Fiesta whiteware recovered from site 12-N-281 which was manufactured between 1935 to present (ODOT 1991:66-67). Stoneware with Albany glaze interior and exterior recovered from sites 12-N-281 which was manufactured with

a termination date of 1940 (Stelle 2001:Chapter I). Stoneware with Albany glaze interior and salt glaze exterior recovered from sites 12-N-41 and 42 which was manufactured with a termination date of 1940 (Stelle 2001:Chapter I).

Table 11: Artifacts from Survey Area 7.

Prehistoric	No.	Historic	No.
Biface, Hafted, Matanzas Side-Notched	1	Glass, Amber	21
Biface, Unidentified	1	Glass, Amethyst	29
Flake, Tool	1	Glass, Aqua	104
Flake, Proximal	3	Glass, Clear	51
Flake, Shatter	2	Glass, Cobalt	4
Angular Shatter	2	Glass, Green	4
Core, Fragment	1	Glass, Milk	28
Shell	2	Ceramic, Porcelain	2
		Ceramic, Porcelain Insulator	1
		Ceramic, Semi-Porcelain	1
		Ceramic, Ironstone	6
		Ceramic, Whiteware	25
		Ceramic, Stoneware	8
		Ceramic, Creamware	2
		Ceramic, Yelloware	1
		Ceramic, Redware	1
		Brick	8
		Battery Core	2
		Metal, Ring	2
		Metal, Hook	1
		Metal, Unidentified	14
		Graphite	1
		Coal	2
		Clinker	15
		Slag	6
Total	**13**	**Total**	**339**

Figure 66: A Matanzas Side-Notched diagnostic point from 12-N-284 (photo by Felicia Konrad, Ball State University).

Figure 67: Representative ceramic historic artifacts from Survey Area 7 (photo by Felicia Konrad, Ball State University).

Figure 68: Representative historic ceramic artifacts from Survey Area 7 (photo by Felicia Konrad, Ball State University).

Figure 69: Representative historic glass artifacts from Survey Area 7 (photo by Felicia Konrad, Ball State University).

Figure 70: Representative historic metal artifacts from Survey Area 7 (photo by Felicia Konrad, Ball State University).

Figure 71: Shell artifacts recovered from 12-N-281 in Survey Area 7 (photo by Felicia Konrad, Ball State University).

Sites

Twelve archaeological sites, 12-N-51 and 281 to 290, were recorded in Survey Area 7 (Figure 72 and Figure 73). Summaries for the individual sites are contained in Volume 2, Appendix F. Ten sites had diagnostic artifacts (12-N-51, 281, 282, 283, 284, 285, 286, 287, 288, and 289). Two sites were prehistoric isolated finds (12-N-284 and 290) and one site was a prehistoric scatter (12-N-280). Eight sites were historic isolated finds (12-N-51, 282, 285, 286, 287, 288, and 289), one site was a historic scatter (12-N-283), and one site was a multicomponent site (12-N-281).

All 12 sites were discovered on till plain and moraines (12-N-51 and 281 to 290). Three sites were found on Foresman loam (FoA and FrB2) soils (12-N-280, 282, and 284), two sites were found on Nesium fine sandy loam (NsB) soil (12-N-281 and 286), two sites were found on Darroch loam (DcA and DdA) soils (12-N-283 and 287), one site was found on Papineau fine sandy loam (PaA) soil (12-N-285), two sites were found on Elston Variant fine sandy loam (EsB) soil (12-N-289, and 290), one site was found on Houghton muck (Ho) soil (12-N-288), and one site was found on Onarga fine sandy loam (OnB2) soil (12-N-51).

Site 12-N-281 was a relatively large historic scatter. Three historic maps were consulted and no historic structures were noted within this site (Andreas 1876; Geo. A. Ogle & Co 1916; Taylor 2009:47). However, there is one historic structure located on the property along the Battleday Ditch, the namesake for this ditch being the previous owners of the property named Battleday (Geo. A. Ogle & Co 1916; Taylor 2009:47). The Battleday Ditch is on the western side of the property, it separates the westernmost third of the field from the rest of the property, and runs into an area of the property that is mostly a wooded area. The location of 12-N-281 is on the eastern side of the property and the location of the former historic structure is on the western portion of the property, but approximately 85m east of the ditch. No subsurface features were observed. Based on archaeological evidence and background research, it was determined that 12-N-281 is likely a historic dump site or secondary deposit, rather than a primary deposit. This could indicate social attitudes in the area towards refuse dumps and the inclination of the people to dump their items elsewhere rather than on house lots. This scatter looks to be located in an area that was covered in vegetation (USGS 7.5' [redacted] Indiana Quadrangle 1980), so it would have been unlikely that a structure was located in this area. It is possible that the patch of vegetation was a more hidden location of disposal for the residents of that property. 12-N-281 was not recommended for further study because there was no indication from the artifacts recovered that it would have the potential to yield additional important information about the local county history beyond the Phase I level. The rest of the site types found in Survey Area 2 are typically considered to not have the potential to yield additional information beyond the Phase I level and are therefore not considered eligible for the National Register of Historic Places.

Density

Survey Area 7 consisted of approximately 88.46 acres of till plain and moraines. Within Survey Area 7, a density of one site per 7.37 acres occurred and sites covered 4.83 percent of the surface area.

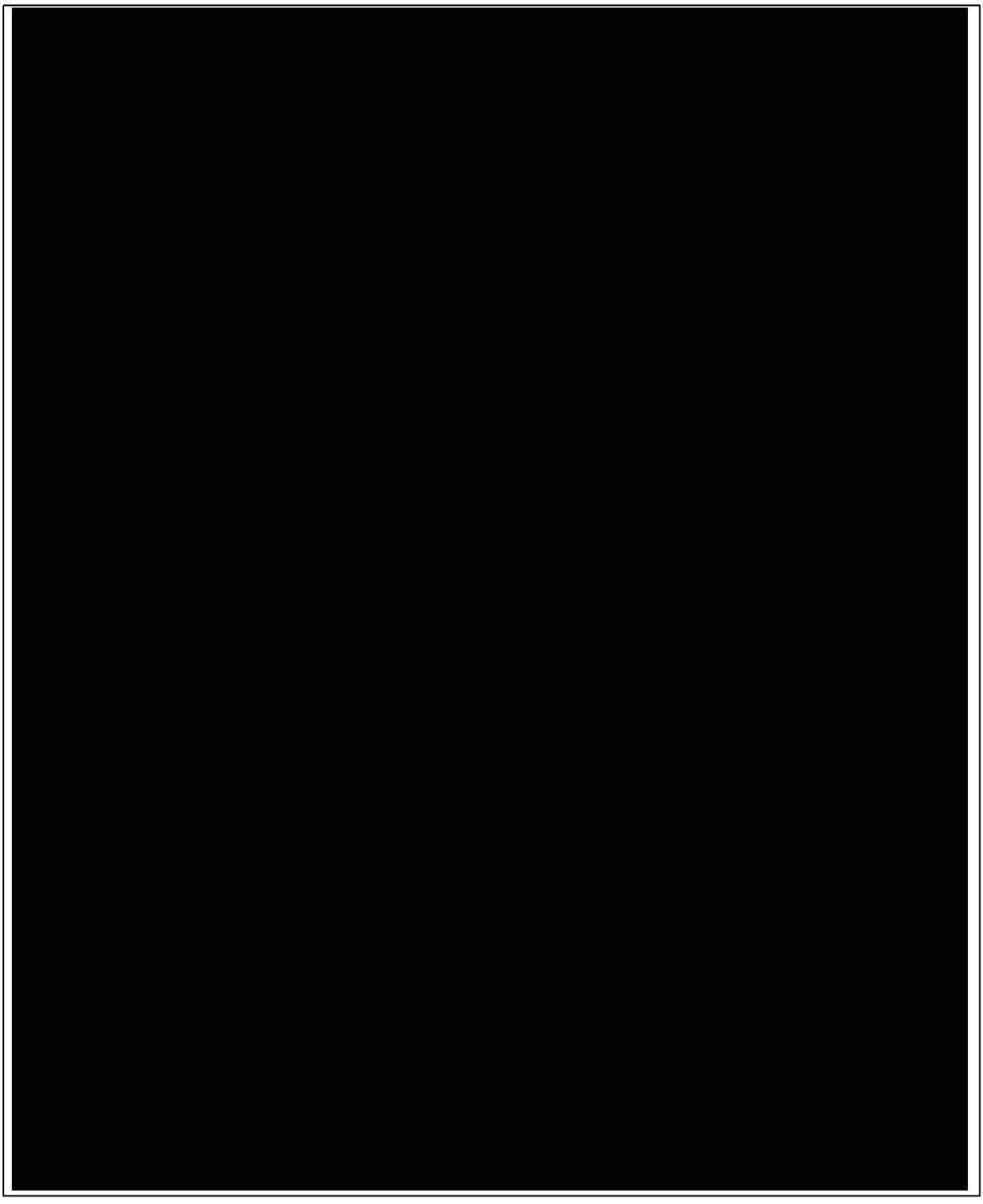


Figure 72: A portion of the USGS 7.5' [redacted], Indiana Quadrangle showing the location of sites 12-N-51 and 12-N-280 to 290.

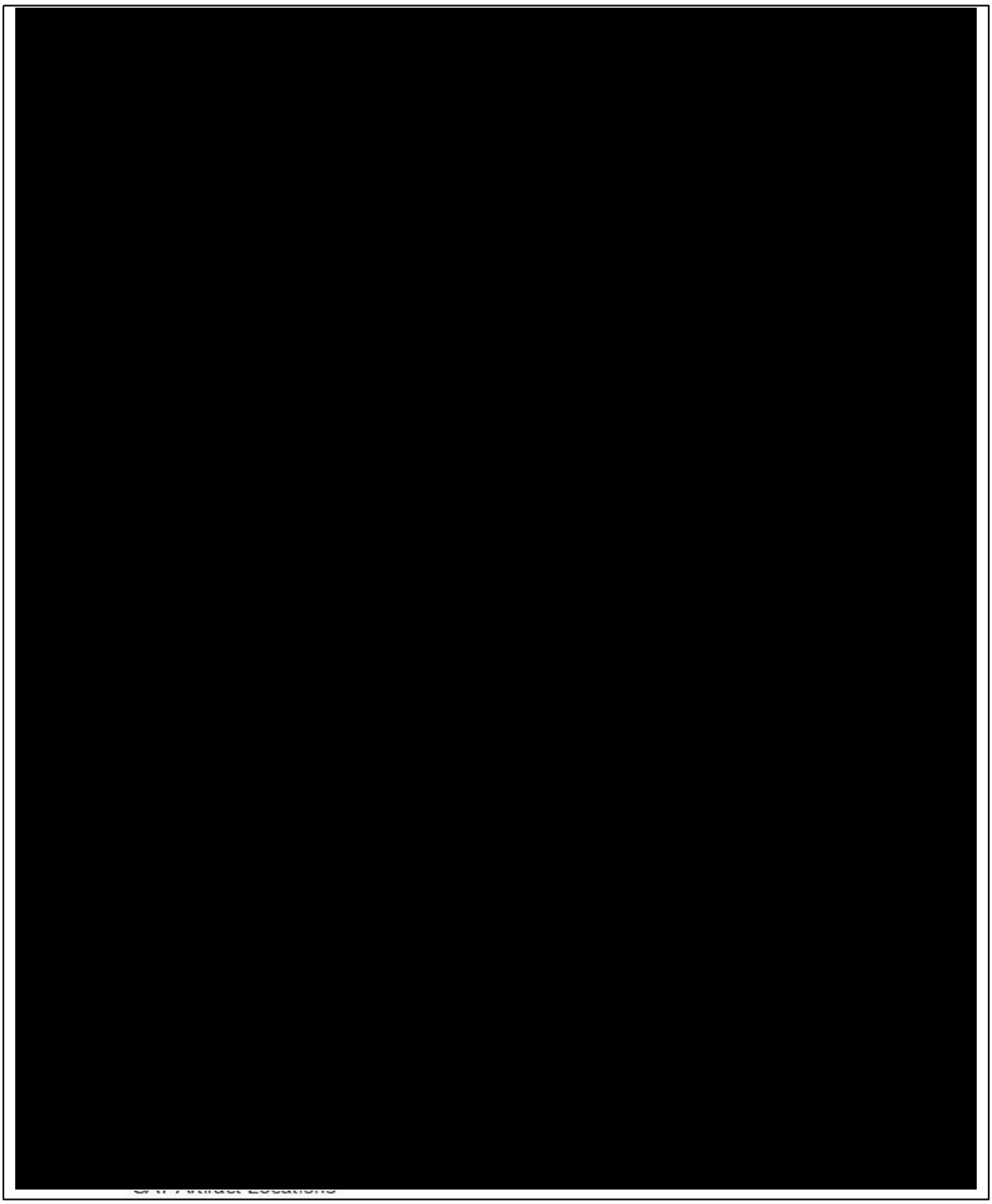


Figure 73: 2011 Aerial (Indiana Data Spatial Service) showing the location of sites 12-N-51 and 12-N-280 to 290.

Survey Area 8

Survey Area 8 was located in [redacted] Township in [redacted] as shown on the Newton County map in the "Illustrated Historical Atlas of the State of Indiana" (Andreas 1968) and the USGS 7.5' [redacted] Quadrangle (Figure 74 and Figure 75)The property was surveyed on November 1, 2014. Ground surface visibility was approximately 30 to 50 percent with agricultural debris obscuring visibility. The field was planted in soybeans and had recently been harvested and the best visibility was in the tire ruts from the tractor. Approximately 289.11 acres were surveyed consisting of till plains and morraines. The area contained Foresman (FoA and FwA), Iroquois (Ir), Onarga (OnB2), Papineau (PaA), Selma (Sg), and Simonin (SmB) soils. Two sites were encountered during the survey. The sites ranged in size from a historic isolated find to a historic scatter of 703.28 square meters (0.17 acres).

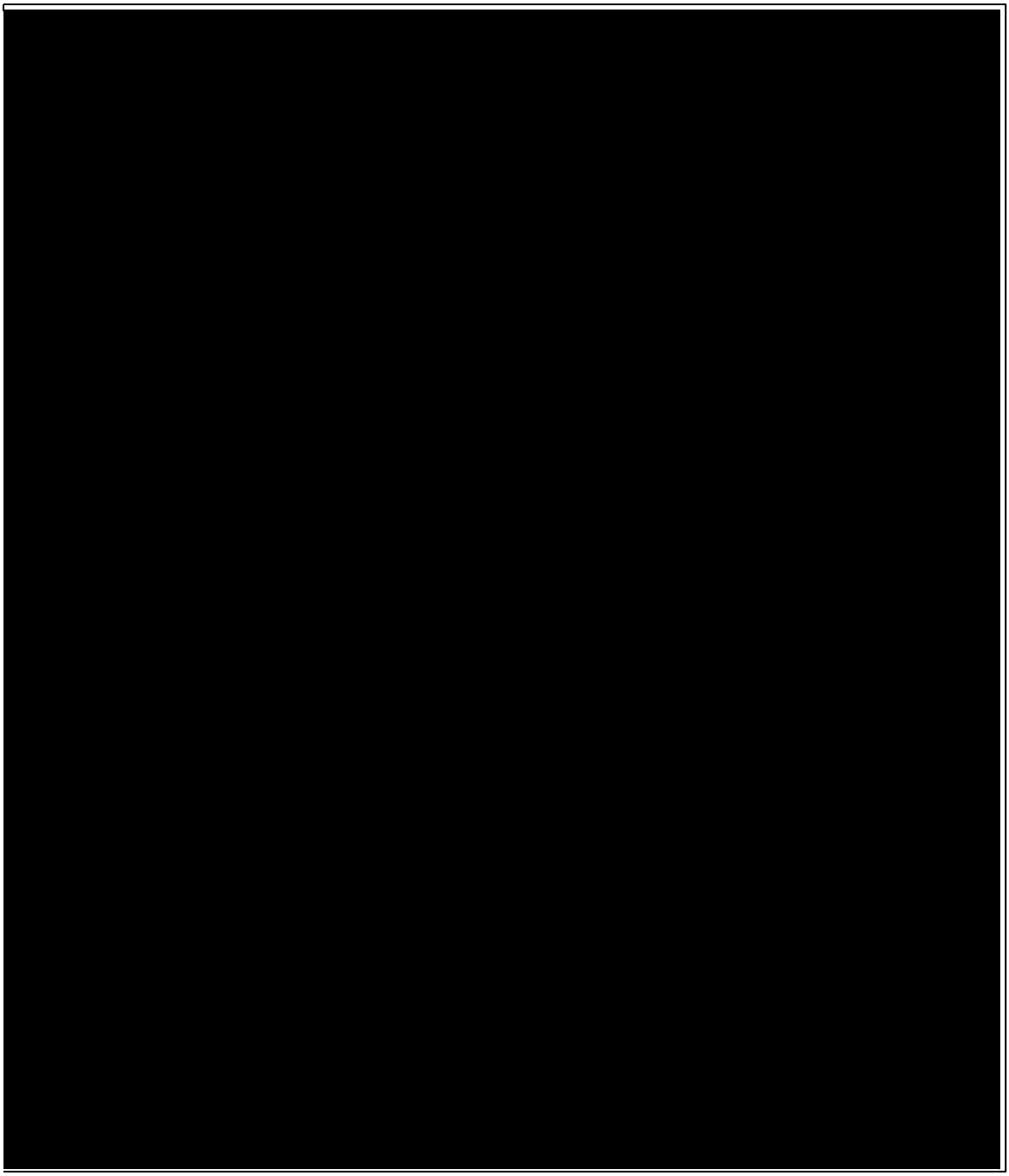


Figure 74: A portion of the map of [redacted] Township, Newton County in the "Illustrated Historical Atlas of the State of Indiana" (Andreas 1968) showing Survey Area 8.

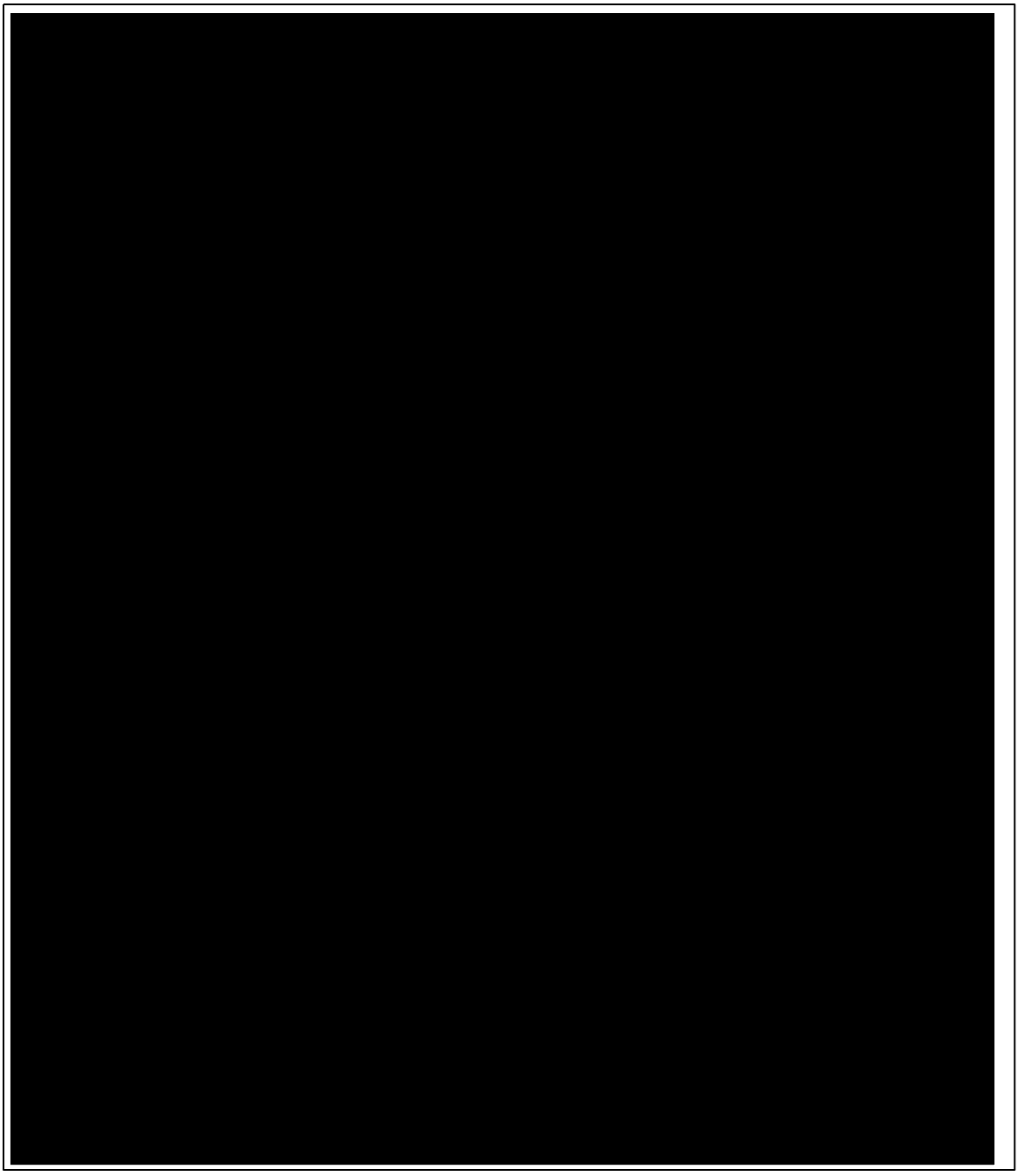


Figure 75: A portion of the USGS 7.5' [redacted], Indiana Quadrangle showing the location of Survey Area 8.

Artifacts

A total of three artifacts were encountered in Survey Area 8. Table 12 provides a list of the artifacts recovered by category. Sample artifacts are shown in Figure 76 Artifacts are listed by individual site in Volume 2, Appendix E.

No prehistoric artifacts were recovered from the survey area.

Three historic artifacts were recovered from Survey Area 8 (Figure 76) and of those, two are diagnostic. Chronologically expressed these items include creamware recovered from site 12-N-292 which was manufactured between 1762 to 1820 (Lofstrom et al 1982:14; ODOT 1991: 178). Plain whiteware recovered from site 12-N-292 which was manufactured from 1820 to present (Stelle 2001:Chapter I).

Table 12: Artifacts from Survey Area 8.

Prehistoric	No.	Historic	No.
		Ceramic, Creamware	1
		Ceramic, Whiteware	1
		Brick	1
Total	**0**	**Total**	**3**

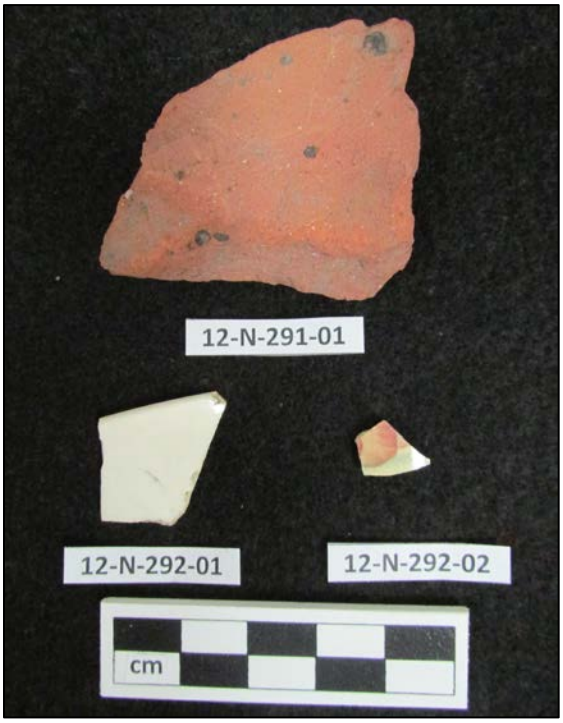


Figure 76: Representative historic artifacts from Survey Area 8 (photo by Felicia Konrad, Ball State University).

Sites

Two archaeological sites, 12-N-291 and 292, were recorded in Survey Area 8 (Figure 77 and Figure 78). Summaries for the individual sites are contained in Volume 2, Appendix F. One site had diagnostic artifacts (12-N-292). One site was a historic isolated find (12-N-291) and one site was a historic scatter (12-N-292).

The two sites were discovered on till plains and located on Iroquois fine sandy loam (Ir) soil (12-N-291 and 292).

The site types found in Survey Area 8 are typically considered to not have the potential to yield additional information beyond the Phase I level and are therefore not considered eligible for the National Register of Historic Places.

Density

Survey Area 8 consisted of approximately 289.11 acres till plains and moraines. Within Survey Area 8, a density of one site per 144.61 acres occurred and sites covered 0.12 percent of the surface area.

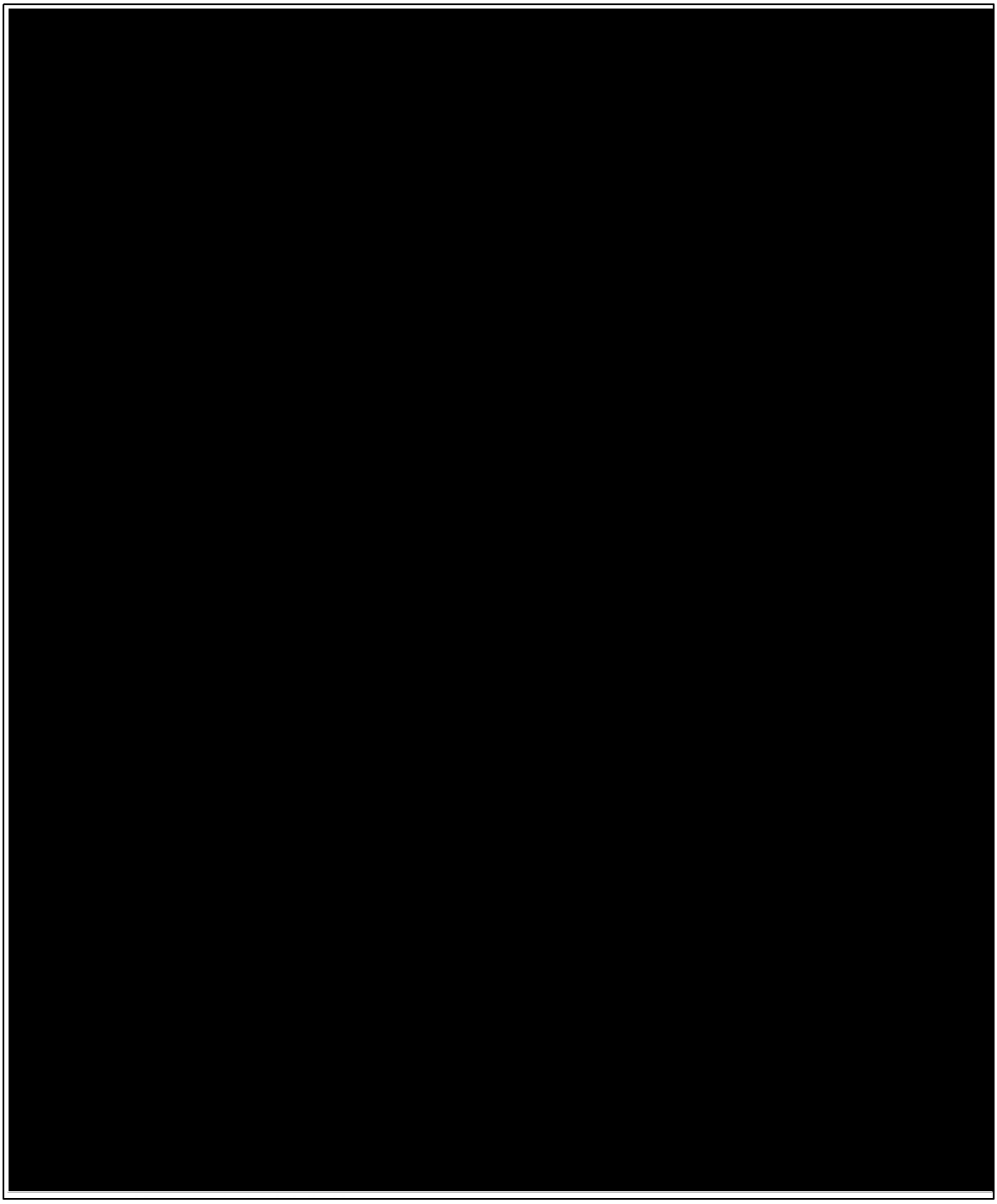


Figure 77: A portion of the USGS 7.5' [redacted], Indiana Quadrangle showing the location of sites 12-N-291 and 292.

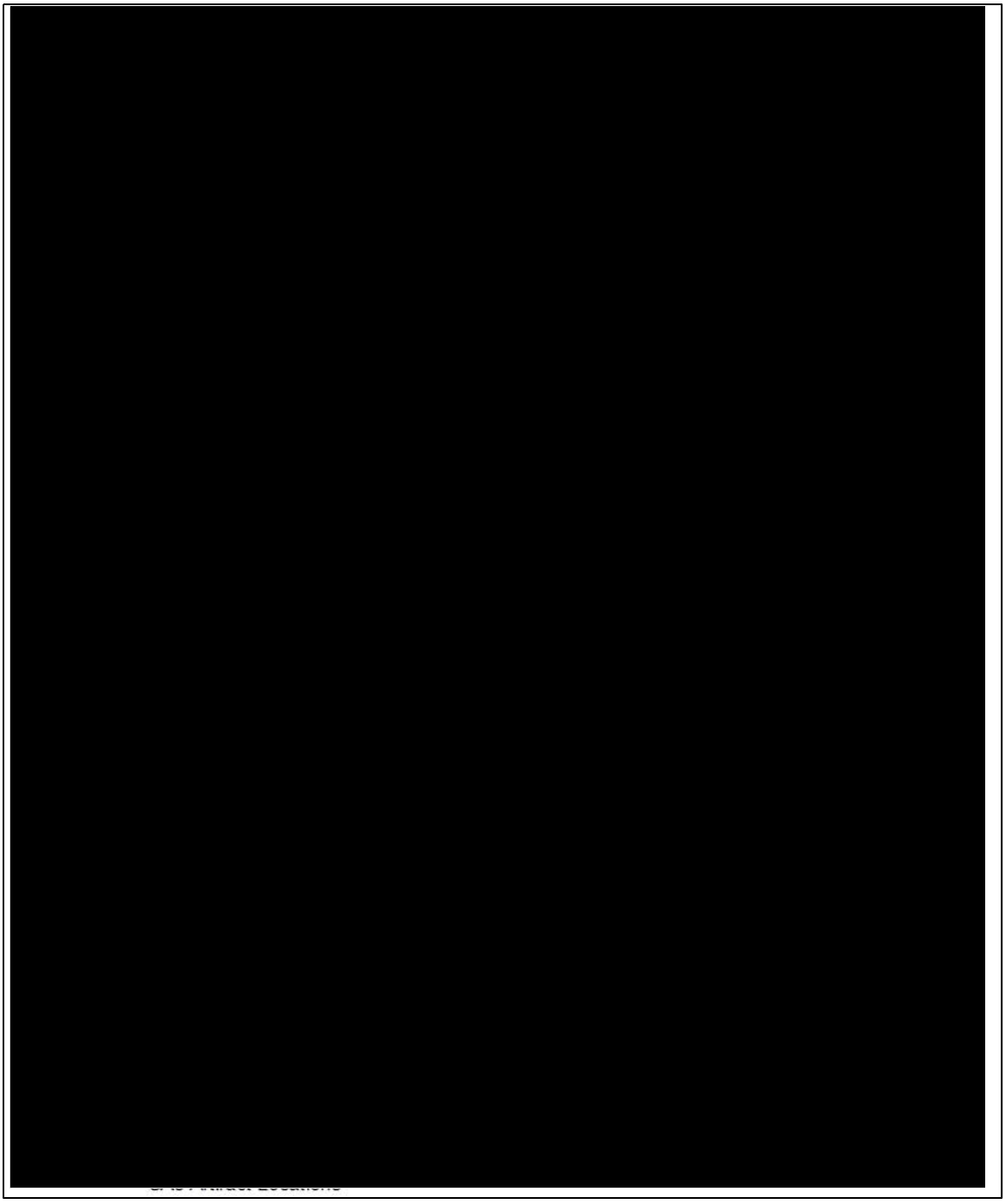


Figure 78: 2011 Aerial (Indiana Data Spatial Service) showing the location of sites 12-N-291 to 292.

Collector Visits

The Carlson Collection

On June 3, 2015, AAL archaeologist Kevin C. Nolan and graduate student Erin Steinwachs visited the Newton County Public Library in Morocco, Indiana to examine a private collection donated by Mr. David L. Carlson to the library. [redacted] The Carlson Collection consists of over 300 artifacts, of which 265 are diagnostic tools or points with intact bases and 41 are ceramic sherds. The collection is organized into six display cases, five of which are exclusively chipped stone tools, and one of which is sherds of pottery.

Following the procedure established by Macleod et al. (2015; see below), Nolan and Steinwachs organized each of the five display cases with lithic tools by base shape. A complication in our analysis was that some of the materials were glued onto the felt mounting for display, including all of the ceramics. This moderately hampered our analysis and limited the data we could collect. Each base category for each case was analyzed in two groups, those free for handling, and those glued to the mounting. We counted totals for each base type by tray and identified raw materials based on macroscopic examination. Due to time constraints, raw material identifications were performed quickly resulting in over 58 percent of the specimens being relegated to Unknown (Table 13). All free specimens were scanned with a Cannon LiDE 110 scanner on both sides (Figure 79, Figure 80, Figure 81). The mounted specimens were photographed multiple times. Table 13 presents the results of this analysis.

Figure 79: Example Scan of Side Notched Points from the Carlson Collection

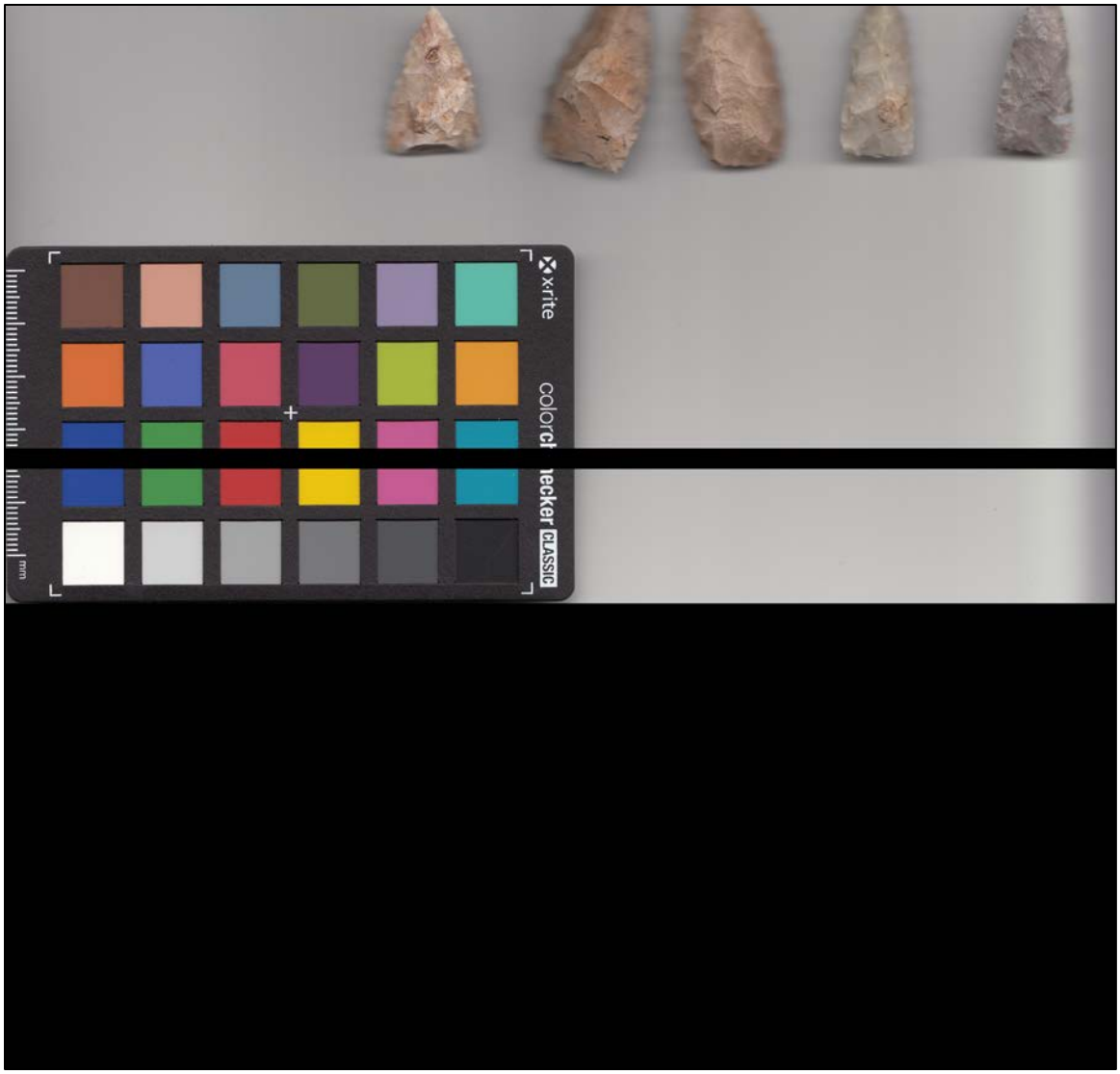


Figure 80: Example Scan of Triangular Points from the Carlson Collection

The collection was relatively evenly split with side notched (29.06%), stemmed points (28.3%), and triangular (26.79%) making up the vast majority of the collection. This is rather distinct from the private collection examined by Macleod et al. (2015; see below) predominantly from Jasper County. Side notched points are the plurality in both the Carlson and [redacted] collections, indicating a possible strong Middle Archaic signal in both Jasper and Newton counties. Triangular points, most of which fall into the Late Woodland/Late Prehistoric period, are a surprising occurrence, though not inconsistent with some other studies from the region (e.g., Surface-Evans 2015; Surface-Evans et al. 2005). This indicates a rather intense utilization of the area near Beaver Lake in the latter portion of the pre-Euro-American sequence. At least one point would be classified as a Cahokia point (Justice 1987:232-235), and there were several possible Nodena Cluster specimens, many in the glued and unanalyzed portion of the collection.

While the fine triangular points are not unique to Mississippian groups, the Cahokia and Nodena points indicate a connection with Mississippian groups in Newton County.

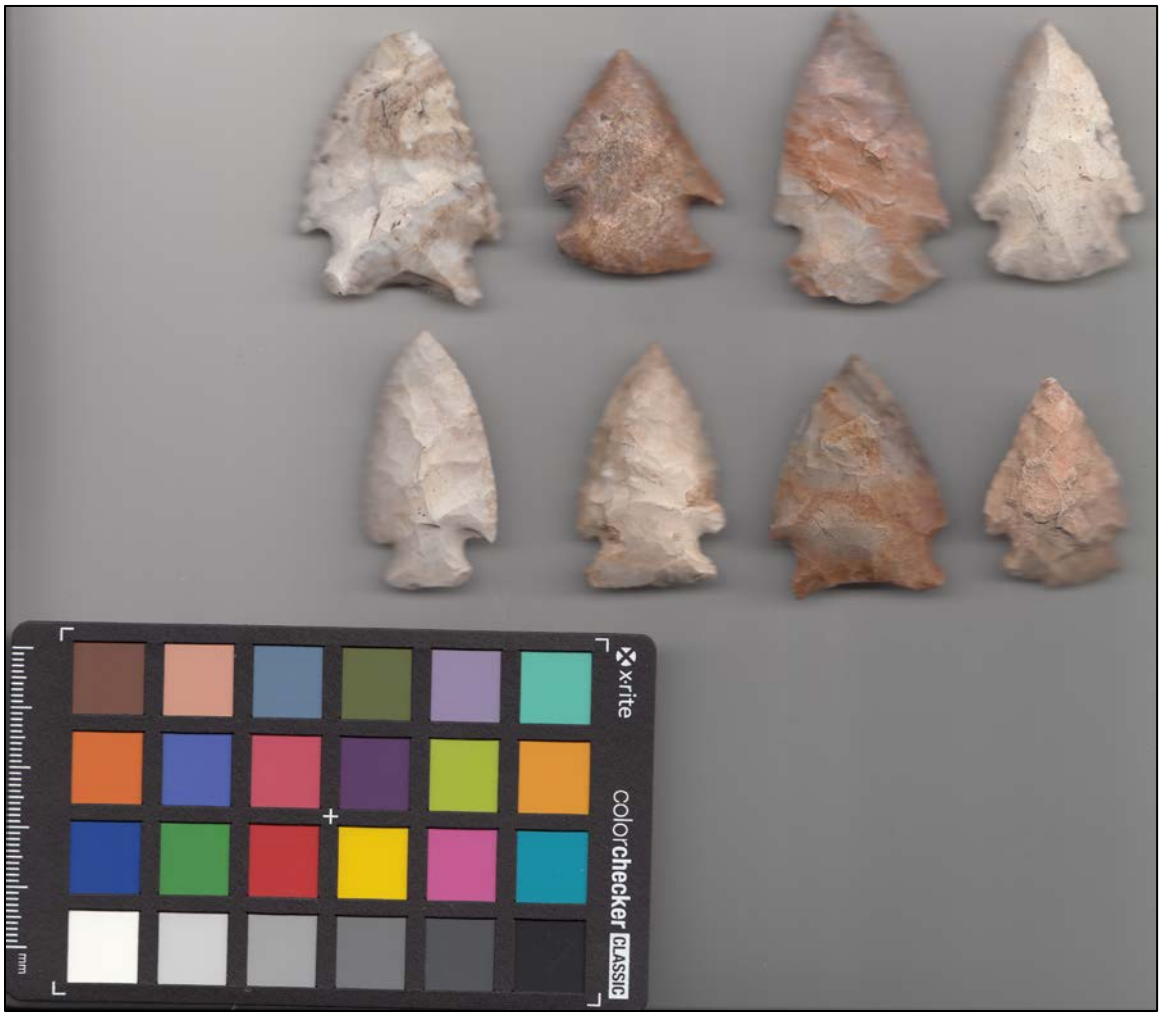


Figure 81: Example Scan of Corner Notched points from the Carlson Collection.

The lower proportion of corner notched points also indicates a distinction from the [redacted] collection. While this base type is not limited in temporal distribution, it may indicate a lessened use during the Middle and early Late Woodland periods. This impression is somewhat contradicted by the pottery collection which was collected "at various sites in Newton County, Indiana" according to the label on the back of the display case.

Figure 82 shows all of the sherds in the donated collection. There are 41 total sherds in collection, of which 21 are decorated. There are several Hopewellian sherds in the collection including one with classic rocker stamping (Figure 82, top row, third from left), and one with dentate rocker stamping that is possibly painted (Figure 82, middle row, third from left). Other designs are reminiscent of general Middle Woodland and Transitional Woodland dentate designs

(e.g., Bennett 1952:112, 119, Figure 47), while others may be related to Mississippian designs (e.g., Pollack 2004:Figure 3.14) with one shell tempered sherd and a shell tempered fragment of a human effigy figuring (middle of bottom row in Figure 82). The dentate stamped sherds are also similar to a handful of sherds from the smaller ceramic collection recorded from Jasper County.

Late Archaic and Early Woodland Stemmed points are also well represented, and some of the ceramics likely date to the Early Woodland Period. There are only a few Paleoindian points in this collection which is another contrast with the [redacted] Jasper County collection. Only two points (0.75%) were identified as Paleoindian types. While one or two of the triangular or unnotched points may fit within Paleoindian types, this still represents less than two percent of the collection compared to the nearly seven percent representing the same period in the Jasper collection. Both of these collections indicate the possibility of a relatively strong Paleoindian presence in northwestern Indiana, more than quadrupling the officially recorded presence in the area (c.f. Dorwin 1966:Figure 1; Division of Historic Preservation and Archaeology 2014).

It is important to note that the pattern of occupation and use of Newton County derived from just one moderate sized collection paints a distinctly different picture than the official records generated by academic and professional archaeologists (c.f. Table 3). The ceramics add a much needed dimension to the archaeological record of the county. No prehistoric ceramics were collected during our surveys, and few have been found previously. These ceramics indicated more than short-term camps and extractive activities during the Middle Woodland and Late Prehistoric periods.

These results agree in certain respects with the previously discovered archaeological record. The Unidentified Woodland and Late Woodland predominance among prehistoric sites (see Table 3) may match up with the preponderance of triangular points and Middle Woodland and Late Prehistoric ceramics. However, the most prolific periods of use indicated by the Carlson Collection do not match the official records from SHAARD, particularly the abundance of side-notched and stemmed points (i.e., Middle Archaic and Terminal Archaic/Early Woodland). While it is not likely that Mr. Carlson's collection is representative of the entire county, it is a strong reminder that professional investigations only net a small proportion of the local archaeological record, and a more comprehensive and extensive record is contained within private collections that professional archaeologists ignore at the peril of misrepresenting the past (LaBelle 2003; Pitblado 2014; Peebles and Shott 1981; Shott 2008).

Table 13: Distribution of Base Types and Chert Types for the Carlson Collection from the Newton County Public Library

	Side Notched		Unnotched	Triangular		Paleo	Stemmed		Corner Notched			
Chert Type	**Free**	**Glued**	**Free**	**Free**	**Glued**	**Free**	**Free**	**Glued**	**Free**	**Glued**	**Total**	**%**
Attica	6	0	0	5	0	0	6	1	0	0	**18**	6.79
Blanding/Elwood-Joliet	9	5	0	4	4	0	8	3	2	3	**38**	14.34
Burlington	1	0	0	0	0	0	0	0	0	0	**1**	0.38
Burlington (HT)	0	0	0	0	0	0	1	0	0	0	**1**	0.38
Dongola	0	0	0	0	0	0	0	0	0	0	**0**	0.00
Flint Ridge	0	0	0	1	2	0	0	0	0	0	**3**	1.13
Flint Ridge (HT)	0	0	0	0	0	0	0	0	0	0	**0**	0.00
Harmilda	0	0	0	0	0	0	0	0	0	0	**0**	0.00
Harmilda/Kenneth	1	4	0	1	0	0	2	0	1	0	**9**	3.40
Holland	1	1	0	2	2	0	2	0	0	0	**8**	3.02
Jeffersonville	0	0	0	0	0	0	0	0	0	0	**0**	0.00
Jeffersonville (HT)	1	0	0	1	1	0	0	1	0	0	**4**	1.51
Laurel	0	0	0	2	0	0	1	3	0	1	**7**	2.64
Laurel/Jeffersonville	3	0	0	0	0	0	1	0	2	0	**6**	2.26
Laurel/Jeffersonville (HT)	0	3	0	0	0	0	0	0	0	0	**3**	1.13
Liston Creek	0	1	0	2	0	0	1	1	1	0	**6**	2.26
Muldraugh	0	0	0	0	0	0	1	2	0	1	**4**	1.51
Wyandotte/Cobden	0	0	0	0	0	0	2	0	1	0	**3**	1.13
Unknown	20	19	1	13	31	2	26	10	10	14	**146**	55.09
Unknown (HT)	2	0	0	0	0	0	1	2	0	3	**8**	3.02
Total	**44**	**33**	**1**	**31**	**40**	**2**	**52**	**23**	**17**	**22**	**265**	
%	**16.60**	**12.45**	**0.38**	**11.70**	**15.09**	**0.75**	**19.62**	**8.68**	**6.42**	**8.30**		
Combined%	**29.06**		**0.38**	**26.79**		**0.75**	**28.30**		**14.72**			

Figure 82: Ceramics from the Carlson Collection, Newton County Library, Morocco, Indiana (Photo by Erin A. Steinwachs, Ball State University).

The [redacted] Collection

What follows in this section is largely taken from Macleod et al. (2015:110-118).

On February 6, 2015 Nolan and Macleod visited the home of local artifact collector, [redacted], in Jasper County. His collection consisted of materials recovered predominantly in Jasper County and occasionally in Newton and Pulaski Counties over the last 50 years. [redacted] had no known provenience for most individual artifacts other than that they had come from known areas where he had collected. [redacted] had his collection divided between formal "show case artifacts" and loose artifacts in boxes which tended to be of lower aesthetic quality. This visit consisted of a visual inspection of his collection. The higher quality "display" materials were documented as is, so as not to destroy any display context. The loose, or "general collection", materials were sorted into coarse groups based on easily identifiable criteria such as hafting elements (i.e. flutes, stems, corner–notching, side-notching, and base-notching), re-sharpening, size, and overall morphology with the assistance of Justice (1987). Each item was inspected individually, occasionally with the use of 5x, 10x, 25x, and 60x magnification in order

to make material identifications. If material association could not be determined in a timely manner (on the order of minutes) it was classified as "unidentified." All pictures and scans taken during the visit are available in the FY2014 HPF Grant Report for Newton County, Volume 2, Appendices G and H (Macleod et al. 2015).

Table 14: Lithic Material Associations of the [redacted] collection

Chert Type	No.	Percent of Assemblage
Silurian	39	9.05
Kenneth, Harmilda	13	3.02
Laurel HT	1	0.23
Liston Creek	25	5.80
Mississippian	144	33.41
Attica HT	12	2.78
Attica	46	10.67
Blanding, Elwood-Joliet HT	2	0.46
Blanding, Elwood-Joliet	3	0.70
Blanding	5	1.16
Burlington HT	6	1.39
Burlington	36	8.35
Cataract	1	0.23
Cobden	4	0.93
Dongola	1	0.23
Haney HT	1	0.23
Haney	1	0.23
Indian Creek	3	0.70
Muldraugh HT	3	0.70
Muldraugh	6	1.39
Wyandotte	14	3.25
Pennsylvanian	2	0.46
Holland Dark Phase	2	0.46
Other	3	0.70
Quartzite	1	0.23
Shale	2	0.46
Unidentified	238	55.22
Unidentified HT	21	4.87
Unidentified	217	50.35

A total of 431 artifacts were examined. As mentioned above, the volume of lithic materials only allowed for a coarse evaluation of material type and general artifact class. This led to a majority of the materials (55.22%) being classified as Unidentified as we were unable to spend large amounts of time identifying the material of any one artifact. The identified lithic materials (Table 14) collectively displayed a source breakdown comparable to the materials

recovered from the survey. An overwhelming majority of identified cherts were of Mississippian age (33.41%), approximately one third (9.05%) of identified cherts were Silurian in age, and around half of one percent (0.46%) of the total material identified as Pennsylvanian. An additional 0.70 percent was classified as Other which consisted of shale and quartzite.

The artifact class breakdown from the general collection is available in Table 15. Fifteen fluted/Paleoindian points were documented from this collection (3.48%). As this is typically an underrepresented period in Indiana due to its age, general depth to material, as well as having the largest amount of geomorphic disturbance since production, these high numbers seem interesting and possibly anomalous. With only one previously documented Paleoindian site in Jasper County, this may indicate a strong, as of yet, undocumented Paleoindian presence in Jasper, or possibly may be a result of collection bias. These numbers may also be inflated artificially if the collector repeatedly came across the same site, in which case this would likely be indicative of a single sizable occupation as opposed to county-wide high site density. When questioned about the source of these artifacts, the collector assured us that they came from many different collection areas and not one site. The varying material of these artifacts also indicates several distinct sources and lends support to the idea that there was a more prominent Paleoindian presence in Jasper County than has been previously documented. If a disproportionately large Paleoindian presence did exist in the county it is undoubtedly the result of different geomorphic conditions allowing for more habitable land during that period and less in subsequent periods. This is may provide insight into how the nature of the county and the marsh changed throughout time.

As for the artifact classes in the general collection, side notched points (n=89) were the most common at 39.73 percent, possibly indicating a strong Middle Archaic presence (Table 15) (Justice 1987). Corner notched points (n=55) which were used during multiple phases were not surprisingly the second most represented group at 24.55 percent. Stemmed points (n=47), common among Late Archaic through Early Woodland cultures, such as Adena, were also well represented at 20.98 percent.

These numbers are generally inconsistent with what has been previously recovered in Jasper County (Macleod et al. 2015). Compare the preponderance of side notched points in the [redacted] collection to only one Middle Archaic site in SHAARD, and the large number of stemmed points to the three previously documented Early Woodland sites. The proportion of side notched points is, however, roughly consistent with the results of our survey which documented one Middle Archaic site, accounting for 25 percent of the diagnostic prehistoric materials. These numbers, while important, should be viewed cautiously as there are a relatively low number of documented diagnostic prehistoric sites in Jasper County and as a result of this survey. This means that comparisons based on these samples should only be discussed generically. Potential collection bias is another reason for caution in comparing results; however, the results should at the very least stimulate interesting and provocative research questions in years to come.

Though lithic materials from the display cases were unable to be grouped effectively, all general lithic artifact classes represented in the general collection were also represented in the display cases. In addition to those several tools were documented, including what appeared to be additional drills, as well as possible burins, awls, and one historic gun flint.

Table 15: Distribution of Artifact Classes within the [redacted] Collection

General Artifact Class	no.	Percent of General Assemblage
Fluted/Paleoindian	15	6.70
Stemmed	47	20.98
Corner Notched	55	24.55
Side Notched	89	39.73
Base Notched	4	1.79
Drill	1	0.45
Unhafted	13	5.80
Total	**224**	

The artifact classification and material type were only both documented for the general collection. These results documented a total of 208 general collection specimens and are presented in Table 16. As discussed earlier, limited time and instrument availability meant that most of the material classifications of this sample were unclassified. However, there still appears to be a distinct trend in local sources as indicated by elevated levels of Mississippian cherts consistent with Attica and Liston Creek. While exotic materials such as those consistent with Burlington and Wyandotte are present, they display appreciably lower numbers than local sources.

A small prehistoric ceramic collection [redacted] This collection contained three dentate stamped sherds, multiple incised sherds, and one thick Early Woodland sherd (Figure 86).

In addition to the points and pottery, the prehistoric collection also included several boxes of “complete” and grooved axes, a bannerstone, a partial birdstone, and several gorget fragments. The historic collection contained a ceramic stopper with stamped ‘+’ on the top, several 19th century pipes, a few prosser-like buttons, historic bullets, historic metal including iron and copper, and various other historic fragments. Representative photographs of the collection can be found in Figure 83 and Figure 84. Representative artifact photos can be found in Figure 85, Figure 86, and Figure 87. All information, in the form of scans, photographs, and office documents, can be found in the FY2014 HPF Grant Report for Newton County, Volume 2, Appendix G (Macleod et al. 2015).

Table 16: Chert types consistent with general artifact classes within the [redacted] general collection.

	Paleo/ Fluted	Stemmed	Corner Notched	Side Notched	Base Notched	Drill	Unhafted
Attica	1	5	6	9	0	0	3
Attica HT	2	0	0	4	0	0	0
Blanding, Elwood-Joliet HT	0	0	0	2	0	0	0
Blanding, Elwood-Joliet	0	0	0	2	1	0	0
Blanding	0	0	0	2	0	0	1
Burlington	0	3	3	2	1	0	1
Burlington HT	0	1	0	0	0	0	0
Cobden	0	1	0	0	0	0	0
Dongola	0	1	0	0	0	0	0
Holland Dark	0	1	1	0	0	0	0
Kenneth, Harmilda	1	0	0	1	0	0	0
Laurel HT	0	0	0	1	0	0	0
Liston Creek	0	2	4	0	0	0	1
Liston Creek HT	1	0	1	0	0	0	0
Shale	0	2	0	0	0	0	0
Unidentified	1	14	13	19	2	1	7
Unidentified HT	1	4	5	9	0	0	0
Wyandotte	1	0	2	0	0	0	0

Figure 83: A portion of [redacted] collection prior to examination.

[redacted]

Figure 85: Example of a scan of corner-notched points from the general artifact collection.

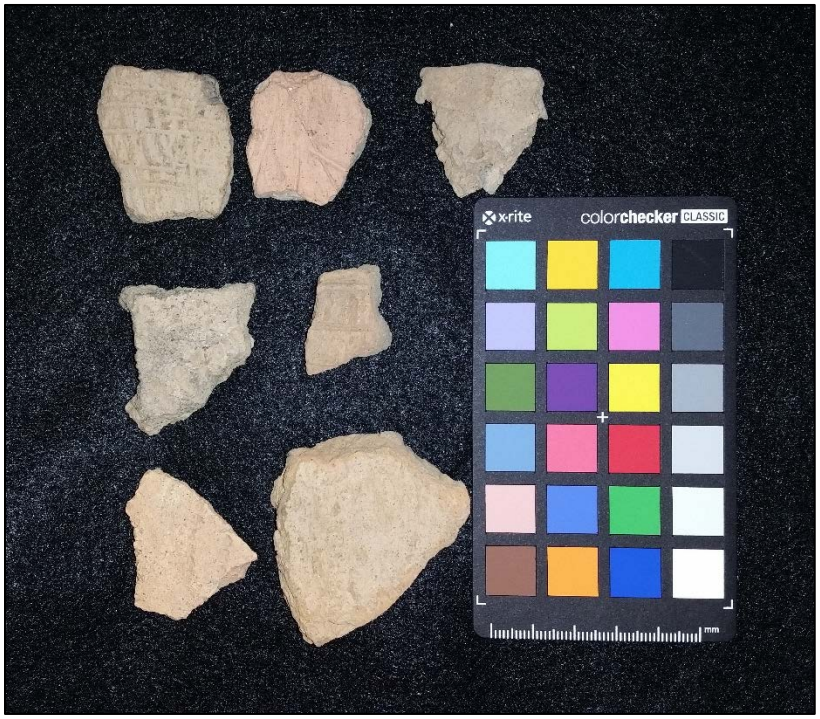


Figure 86: Example of prehistoric pottery in [redacted] collection.

Figure 87: Example of historic artifacts from the [redacted] collection.

The collector was very interested in our survey and even shared with us what information he could remember regarding the "best hunting grounds" which undoubtedly correspond to archaeological sites. [redacted] had good recollection of specific areas where he had collected, but except for a few cases, did not recall which artifacts were collected from which locations. The collection areas were identified and documented during the visit using three separate media including, two Plat Books, one of Newton and Benton counties (Town & Country 1978) and one of Jasper County (Jasper County Abstract Company 1984), with some locations also logged using IndianaMAP.org (Indiana Geographic Information Council 2015). Copies of all of these maps are all available in FY2014 HPF Grant Report for Newton County, Volume 2, Appendix H (Macleod et al. 2015). The specific documentation of artifact finds on the maps was done by highlighting and, marking on paper copies of the maps, with the exception being those maps that were produced using the IndianaMAP web resource. Other cultural resources were documented verbally, the notes from which can be viewed in Table 17. The notes of this meeting documented approximate site locations, as well as artifacts and features associated with those sites. This table also includes additional information which may be of use in identifying the exact site location such as the name of the farm or landmark association. There is considerable overlap between the meeting notes (Table 18) and the map documented sites (Macleod et al 2015:Volume 2, Appendix H) and as such these two resources would be most effectively used together in order to better understand local cultural resources.

Table 17: Summary of verbal collector knowledge of cultural resources within Jasper and Newton Counties.

Summary/Discussion

A total of 902.84 acres were surveyed during this project and 89 new archaeological sites were recorded. No human remains were discovered as a result of this grant project. Eight parcels in southern Newton County were surveyed. The survey documented the human occupation of Newton County with the strongest presence during the Late Archaic period a possible Middle Woodland component, other unidentifiable Prehistoric periods. The Historic period is the most strongly represented in the assemblages recovered during our survey (Table 15). Considering the limitations of Phase I surveys, it is presumptuous to assign functionality to sites identified during this survey. Site types were therefore not defined beyond isolates and scatters. However, it appears likely based upon the variation in artifact classes discovered on the sites that multiple sites types were represented. In addition to the field survey, collector visits were conducted on February 6, 2015 and June 3, 2015 which yielded information concerning the presence of unrepresented artifact classes as well as probable site locations in both Newton and Jasper counties.

Artifacts

The field survey recovered 55 prehistoric artifacts (1/16.4 acres) and 1,274 historic artifacts (1/0.71 acres) (Table 18). The majority of prehistoric artifacts consist of lithic debitage. The edge modification of approximately 20 flakes indicates the debitage could have functioned as expedient tools. Two of the formal lithic tools (Table 19) were projectile points dating to the Late Archaic period (Justice 2006:115-116, 119-121), and the blade-like flake may represent Middle Woodland period activity (Greber et al. 1981; Montet-White 1968). Other stone tools consisted of groundstone tools, and flake tools. Historic artifacts included various types of ceramics, various colors and types of glass, metal objects, and brick fragments.

Chert

Lithic artifact chert types are shown in Table 20. The chert identification is listed by geologic time period as this is the most accurate and consistent means of identification. Chert was then listed by which type it is most consistent with as described in Cantin (2005, 2008) and in comparison with specimens in the AAL comparative collection. If the artifact material displayed characteristics that were consistent with multiple chert types, all applicable types were listed in the identification. The locations of chert outcrops in Indiana are shown in Figure 3.

The lithic artifacts for this survey were dominated by Silurian cherts (78 %). Of the Silurian assemblage an overwhelming majority was consistent with Liston Creek chert (72%). No natural chert outcrops exist within Newton County. However, outcrops of Liston Creek exist

in Miami, Wabash, and Huntington counties, the closest of which being approximately 116 km to the east of Newton County (Cantin 2005). Specimens consistent with Laurel chert appear in four percent of the assemblage recovered from the survey areas. The closest outcrop of this chert exists in Wayne County, which is approximately 230 km to the southeast of Newton. None of the projectile points recovered were made from Silurian chert. This may indicate that Silurian age chert, particularly that consistent with Liston Creek, was used primarily for non-point tool manufacture, or even expedient tool manufacture.

Table 18: Artifacts Recovered.

Prehistoric	No.	Historic	No.
Biface, Hafted, Brewerton Side-Notched	1	Glass, Amber	49
Biface, Hafted, Matanzas Side-Notched	1	Glass, Amethyst	90
Biface, Hafted, Unidentified	4	Glass, Aqua	293
Biface, Unhafted	2	Glass, Clear	164
Core	2	Glass, Cobalt	10
Core, Fragment	1	Glass, Green	10
Flake, Proximal	21	Glass, Milk	68
Flake, Distal	1	Glass, Red/Pink	1
Flake Tool	2	Glass, Yellow	1
Flake, Blade-like	1	Ceramic, Creamware	3
Flake, Shatter	12	Ceramic, Ironstone	41
Angular Shatter	2	Ceramic, Porcelain	18
Groundstone Tool	3	Ceramic, Redware	6
Shell	2	Ceramic, Semi-Porcelain	5
		Ceramic, Stoneware	104
		Ceramic, Whiteware	164
		Ceramic, Yelloware	4
		Ceramic, Industrial Porcelain/Insulator	4
		Ceramic, Prosser Button	2
		Metal, Buckle	1
		Metal, Shotshell	2
		Metal, Rivet	1
		Metal, Nail	2
		Metal, Cat	1
		Metal, Slotted Spoon	1
		Metal, Ring	3
		Metal, Drive Train	2
		Metal, Chain Links	1
		Metal, Hook	1
		Metal, Bracket	1
		Metal, Washer	1
		Metal, Disc	1
		Metal, Unidentified	28
		Battery Core	2
		Brick (114 not collected)	19
		Graphite	1
		Clinker	15
		Coal	16
		Slag	138
Total	**55**	**Total**	**1274**

Table 19: Diagnostic Prehistoric Artifacts by Cultural Time Period.

Cultural Period	Projectile Point Styles
Late Archaic	Brewerton Side-Notched (1), Matanzas Side-Notched (1)

Mississippian chert had the second greatest representation in this survey (20 %). Of the Mississippian material recovered, those consistent with Attica comprised the majority of the collection (10 %). As mentioned in the introduction, no natural chert outcrops exist in Newton County. However, outcrops of Attica exist in Boone, Fountain and Warren counties, all of which are located approximately 70 km southeast of Newton County. All six of the hafted projectile points recovered were made from Mississippian chert, which were consistent with Elwood-Joliet, Burlington, Attica, and Muldragh chert (from sites 12-N-75, 89, 90, 273, 280, 281, and 284). The two identifiable points date to the Late Archaic period (from sites 12-N-75, and 284) were made of chert consistent with Attica and Muldragh. Elwood-Joliet chert (4 %) and Burlington chert (2 %) come from central and western Illinois and are typically higher quality material than what is found in northwest Indiana. Burlington chert in particular can be an exceptional material and would have been highly prized in prehistoric times, and in fact was widely traded at various periods in prehistory. The distance to these materials indicates that trade would likely have been active at least at some point between the areas that are now northwest Indiana and central/southwest Illinois.

Pennsylvanian chert is the third greatest in abundance (2 %) with specimens most consistent with heat treated Holland chert forming the entire Pennsylvanian assemblage. The low amount of Pennsylvanian chert is to be expected as the sources of these cherts in Indiana are located exclusively in the southern half of the state. Holland in particular outcrops about 300km to the south in Dubois County. None of the points recovered during field survey were made of Holland chert.

The breakdown of the chert tells us that prehistoric people living in Newton County were likely relying primarily on the closest chert sources (Liston Creek and Attica to the south and southeast of Newton County) for over 80 percent of their lithic material (Table 20). It also indicates that this heavy reliance on the closest chert resources was supplemented occasionally with more exotic lithic materials from further south and southeast such as Holland, Cataract, and Laurel, as well as from central and southwest Illinois in the form of Burlington and Elwood-Joliet. The breakdown of the lithic assemblage could indicate that the peoples that inhabited Newton County during prehistoric times migrated from south and southwest of the county, bringing chert materials with them. Newton County may not have been an area of primary habitation due to the inhospitable marshlands, but the locations of the projectile points north and south of the Iroquois River, in the uplands, could show areas of hunting used during the Late Archaic period.

Table 20: Chert Raw Materials.

Chert	No.	Percent of the Whole Assemblage
Silurian Chert	**39**	**78**
Consistent with Laurel	2	4
Consistent with Liston Creek	35	70
Consistent with Liston Creek Heat Treated	1	2
Consistent with Kenneth	1	2
Mississippian Chert	**10**	**20**
Consistent with Attica	5	10
Consistent with Attica and Muldragh Heat Treated	1	2
Consistent with Burlington	1	2
Consistent with Cataract	1	2
Consistent with Elwood-Joliet	2	4
Pennsylvanian Chert	**1**	**2**
Consistent with Holland Heat Treated	1	2
Total	**50**	**100**

Sites

Of the 89 archaeological sites, 23 had unidentified Prehistoric components (Table 21). The identified precontact components consisted of two Late Archaic sites. Seventy-four sites had Historic components, dating from the early 18th century to present. Previously recorded sites for the till plain of central Indiana support the trend of encountering low frequencies of Paleoindian, Early Woodland and Middle Woodland component sites.

Table 21: Site Components Recorded as a Result of Survey.

Component	No.	Comment
Unidentified Prehistoric	23	10 Multicomponent (10 Historic)
Late Archaic	2	0 Multicomponent
Historic	74	10 Multicomponent (10 Unidentified Prehistoric)
Total	**99**	

Various results of the collector visit were both consistent and inconsistent with the results of our survey. The high number of Paleoindian artifacts from the [redacted] and, to a lesser extent, the Carlson collections has helped inform a previously under-documented time period and hinted at potentially different cultural representation within the county than the results of our survey and previous investigations. The large quantity of Side-Notched points in both collections was somewhat consistent with the one Middle Archaic point recovered from Jasper County (Macleod et al. 2015), but distinct from our Newton county results. This is also distinct from what was previously know about the county. The relatively large number of Stemmed points as well as Early Woodland ceramics stood in contrast to our total absence of Early Woodland components

were recovered from our survey and only four had been previously documented in SHAARD. Further the large number of triangular points in the Carlson collection combined with Middle Woodland and Mississippian period ceramics indicate a potentially large gap in the existing professional records for Newton County. Particularly interesting are the Hopewell ceramics and a partial effigy made from shell tempered clay.

The interest expressed in our survey by the librarians and director, plus [redacted] and others has helped tremendously in developing the culture history of Newton County. Future investigations, particularly in areas with more finite artifact locales such as Newton County, would do well to use the previously acquired knowledge and materials accrued by local collectors. [redacted] has volunteered to put us in contact with additional collectors to facilitate our future research in the region. Our experience with these private collections illustrates patterns found in many other places: collectors hold the vast majority (>90%) of the archaeological record and any examination of the past that ignores this resource is woefully incomplete (LaBelle 2003; Pitblado 2014; Shott 2008).

Historic Settlement

Seventy-four sites with Historic components were discovered. These sites ranged from small to extensive historic scatters and were occasionally multicomponent with Unidentified Prehistoric isolates or scatters. The historic component sites yielded the vast majority of artifacts recovered during the project.

Survey Areas 2, 5, and 7 contained sites with relatively substantial historic assemblages that had early historic dates between the mid-1700s and 1850, but also artifacts dating into the mid to late nineteenth century and early twentieth century (12-N-42, 90, and 281). Based on historic research and the lack of subsurface features, these sites appear to be historic dump sites, or secondary deposits from relatively recent to modern activity, rather than primary deposits and locations of structures or activity areas possibly associate with early occupation of the county. This could indicate social attitudes in the area towards refuse dumps and the inclination of the people to dump their items elsewhere rather than on house lots. Only 12-N-90 was recommended for further study because there was no indication that 12-N-42 or 12-N-281 would have the potential to yield additional important information beyond the Phase I level. Prior to this survey, there were 18 historic scatters reported for Newton County. Further research and analysis of our data could greatly increase our understanding of early historic occupation in Newton County.

Density

The project documented an average of one site per 10.14 acres and an average artifact density of one artifact per 0.68 acres surveyed. The project documented an average artifact

density of one historic artifact per 0.71 acres surveyed and an average artifact density of one prehistoric artifact per 17.03 acres surveyed. Artifact densities by survey area are presented in Table 22.

Table 22: Artifact Densities.

Survey Area	No. Acres	No. Sites	Sites per Acre	No. Artifacts	Artifacts per Acre
SA 1 (Till Plain/Moraine)	41.77	0	0.00	0	0.00
SA 2 (Floodplain, Till Plain/Moraine)	81.54	11	0.13	247	3.03
SA 3 (Floodplain, Till Plain/Moraine)	48.24	8	0.17	44	0.91
SA 4 (Till Plain/Moraine)	126.73	10	0.08	139	1.10
SA 5 (Till Plain/Moraine)	158.07	26	0.16	627	3.97
SA 6 (Till Plain/Moraine)	68.82	20	0.29	37	0.54
SA 7 (Till Plain/Moraine)	88.46	12	0.14	352	3.98
SA 8 (Till Plain/Moraine)	289.21	2	0.01	3	0.01
Total	**902.84**	**89**	**0.10**	**1329**	**1.47**

Recommendations

Of the 89 archaeological sites discovered by this project, 88 are not considered eligible for listing on the Indiana Register of Historic Sites and Structures or the National Register of Historic Places (Table 23). Most of these ineligible sites were prehistoric isolated finds or small scatters of lithic artifacts. One historic scatter (12-N-90) was determined to be potentially eligible for listing on the Indiana Register of Historic Sites and Structures or the National Register of Historic Places based on our background research and the high number and density of historic artifacts found within the site with some dating to the early to mid-1700s. There also appears to be a deviation of County Road 350E from the standard county road plan that could be significant to the historic use of the land on which 12-N-90 was found (Andreas 1968; Geo. A. Ogle & Co 1916; USGS 7.5' Grant, Indiana Quadrangle).

Table 23: Site Recommendations.

Recommendation	Site No.
No further archaeological investigations recommended; n=88	12-N-38 to 89, 91 to 292.
Further archaeological investigations recommended (high density, large historic scatters); n= 1	12-N-90

Though there were a limited number of recommended sites in this survey, the site that was recommended (12-N-90) could be significant in its contribution to the understanding of Newton County historic settlement. This site in an otherwise low density environment could indicate a pattern of secondary deposit away from structures. The orientation and location of the scatter on a high rise in the topography, the proximity to the road, and the amount of household

items in the artifact assemblage create favorable conditions for a possible structure to have been located on this site, but there are none documented by the historic maps referenced (Andreas 1968; Geo. A. Ogle & Co 1916; Taylor 2009:67). This, as mentioned earlier in the report, indicates that many of the historic scatters were not primary deposits, and thus are considered secondary or historic dump sites. The historic secondary deposit could indicate a social constraint on where to dispose of refuse within the county during a time when there was no organized waste disposal service. The variety of artifacts found in such a condensed area gives an indication that these dump sites could have been used for generations rather than just as a one-time deposit location. For this reason, 12-N-90 is considered to have the potential to yield important information beyond the Phase I level and therefore is considered potentially eligible for the National Register of Historic Places.

Public Outreach and Student Involvement

On September 27, 2014, Ball State University's Applied Anthropology Laboratories took part in Mound State Park's annual Indiana Archaeology Month activities. There were numerous hands-on demonstrations and participant activities for visitors. Posters depicting the methods and results of several previous HPF grants were on display and this was used to discuss both the methodology and goals of the FY2014 Grant surveys in Jasper and Newton counties. Ball State archaeologists and students used this public event to speak with numerous local individuals fostering public interest and awareness in this HPF Grant survey. Approximately 150 members of the public attended this event at Mounds State Park, Anderson, Indiana.

In October 2014, an Open House was held in the Applied Anthropology Laboratories. The goals of the open house were to showcase current projects that included student involvement, encourage additional student involvement, and to invite possible community and professional collaborators to view our work and in-process projects. The focus of the Newton County FY2014 Grant exhibit was twofold. Historic and prehistoric artifacts were displayed and explained to the public in order to demonstrate the diversity of knowledge necessary for archaeological investigations such as this. In addition, chert and lithic identification with hands-on demonstrations of the identification and cataloging processes were given to Open House attendees (Figure 88).

On April 27, 2015, a public presentation was given at the Newton County Government Center in Morocco, Indiana, by AAL archaeologists Christine Thompson and Department of Anthropology graduate student Jamie Leeuwrik. The presentation was sponsored by the Newton County Historical Society. The hour long presentation reviewed all aspects of the grant including background, methodology, and results. Both historic and prehistoric artifacts representative of newly discovered sites were available for the attendees to view. A student created video was also shown that described and illustrated our methodology, field techniques, artifact processing, and identification. Over 60 people attended the presentation which included a question and answer session, and a short discussion of Indiana archaeology laws. Coverage of this presentation and project proceedings in general were also posted to the AAL's Facebook page and various other social media sites. [redacted]

Throughout this project there was broad support for the pedestrian surveys from the residents of Newton County. Fourteen landowners gave permission to survey their properties totaling 1,251.08 acres of agricultural land available for survey. Landowners who granted permission to survey their property were very enthusiastic and eager to have their fields surveyed. Landowners were deeply interested in the types of artifacts that were found and how their property was used in prehistory and during Euro-American contact. All landowners requested that the artifacts discovered be returned to them. Numerous personal phone calls were made with various landowners who expressed great interest in participating in the survey and shared with the author the types of artifacts that had been surface collected on their property in the past. It became apparent that Newton County has an active and involved public that displays a great interest in their county's history, both historic and prehistoric.

In addition to public presentations and demonstrations, the results of the Newton County HPF grant are being published in various ways. An article on the overall results of this FY2014 Grant will be published in the Indiana Archaeology journal, compiled and distributed by DHPA.

Throughout this project, there has been a very large amount of Ball State University Department of Anthropology student involvement and participation. All students were supervised and mentored by co-PIs Thompson and Nolan. Twenty students were involved with the fieldwork and participated in field surveys. Two students were involved in washing and cataloging of artifacts. One student was responsible for artifact photography. Four students compiled and entered all of the data into the SHAARD database. One student assisted with the presentation at the Newton County Government Center on April 27, 2015. One student from the 2012 Blackford County HPF project created the methodology video that was shown during that this year's HPF Grant presentation.

Figure 88: Students discussing the Jasper and Newton County HPF grants at the AAL Open House in October 2014 (Photo by Christine Thompson, Ball State University).

Figure 89: Axe and celt from [redacted]

Figure 90: Bannerstone from Mr. Briddman

Figure 91: Bannerstone from [redacted]

Alignment with Cultural Resources Management Plan for Indiana

This FY2014 HPF Grant addressed various goals and objectives in Indiana's Cultural Resource Management Plan for 2013-2019 (Division of Historic Preservation and Archaeology 2012) by increasing and fostering public awareness and interest in the archaeological resources of Newton County. This grant project enhanced understanding and relationships in Newton County from curious citizens, to landowners, to collectors.

The first goal of Indiana's Cultural Resource Management Plan 2013-2019 (Division of Historic Preservation and Archaeology 2012:33) is to increase public awareness, public understanding, and public support for preservation archaeology. Through numerous waves of letters mailed to 36 landowners in Newton County, through public events such as the annual Archaeology Month Activities at Mound State Park, and with the public presentation held in Newton County in April 2015, AAL has been able to make the public aware of both our HPF grant surveys and the importance of archaeology. The AAL has received broad support, interest, and enthusiasm from the people of Newton County. They have shown a great interest in the history and prehistory of their county, and are excited to be a part of the surveys to learn more about their own property. They also realize the importance of protecting these archaeological resources as evidenced by the attendance and interest at the presentation at the Newton County Historical Society in Newton County. These activities have helped meet Indiana's objectives of increasing public awareness through varied efforts, media, and programs aimed at all Hoosiers; increasing public understanding of Indiana's cultural resources and our statewide heritage; and increasing the public support for heritage preservation by marketing its benefits.

The second goal of Indiana's Cultural Resource Management Plan 2013-2019 (Division of Historic Preservation and Archaeology 2012:34) is to broaden the preservation and archaeology communities and promote archaeology preservation communities. As stated in the first goal, numerous public events and presentations have taken place as part of the FY2014 Newton County HPF Grant. Contact with a local collector and an examination of his collections in February 2015 has served to both increase the ability of this survey to make archaeological interpretations of this county as well as cement ties with and foster more responsible practices within the collecting community. In addition, several articles have been or are being submitted to the Indiana Archaeology journal and may be submitted to other publications or presented at conferences. Redacted versions of both grant reports will be available for public review on AAL's web site. The activities listed in Goal 1 and the publications listed here have helped and will help meet Indiana's objectives of building relationships among people and groups with similar or complementary purposes and to identify new partners and develop opportunities for collaboration.

The third goal of Indiana's Cultural Resource Management Plan 2013-2019 (Division of Historic Preservation and Archaeology 2012:35) is to advocate for preservation opportunities

and options for all community, cultural, and heritage resources. Although AAL's FY2014 HPF Grant did not have a direct impact on this goal, it is hoped that our grant projects could be the foundation for future preservation opportunities and options for Newton County.

The final goal of Indiana's Cultural Resource Management Plan 2013-2019 (Division of Historic Preservation and Archaeology 2012:37) is to advance preservation as economic development. Again, AAL's FY2014 HPF Grant did not have a direct impact on this goal. However, it is hoped that through the presentations, online journal articles, and the online redacted versions of the two grant reports the public may start to think of ways to protect, promote, and capitalize on their cultural and archaeological resources.

Research Questions

The following research questions, while not exhaustive, guided this project.

1. What is the cultural chronology for Newton County?

2. What are the densities and distributions of archaeological sites along the Iroquois River and on Iroquois Till Plain within the county?

3. What is the settlement pattern for Euro-American people along the Iroquois River?

4. What is the average site density within the county?

5. Is there evidence for interaction between Euro-American settlers and Native American tribes at and after the time of settlement?

We will address our findings of each of these questions, in order, below.

1. What is the cultural chronology for Newton County?

Prior to this year's survey, Newton County had 115 Unidentified Prehistoric sites, no Paleoindian sites, six Archaic sites (two Early Archaic, one Middle Archaic and two Late Archaic), 43 Woodland sites (four Early Woodland, four Middle Woodland, and eight Late Woodland), one Late Prehistoric site, and 18 Historic sites (Table 3).

This project has added to the cultural chronology of the county with 89 sites including 23 Unidentified Prehistoric site components, two Late Archaic site components, and 74 historic site components (Table 24).

In addition, two previously undocumented projectile point types were added to the knowledge of Newton County's prehistory (Table 25). The two diagnostic Late Archaic projectile points recovered were one Matanzas Side Notched point and one Brewerton Side Notched Point. We also discovered one blade-like flake, hinting at the possibility of this artifact category at other places within Newton County.

Table 24: Number of Site Components Added.

Cultural Period	Added	Previous	Total
Unidentified Prehistoric	**23**	**115**	**138**
Paleoindian (ca. 10,000 – 7500 B.C.)	**0**	**0**	**0**
Archaic	**2**	**6**	**8**
Early Archaic (ca. 8000 – 6000 B.C.)	0	2	2
Middle Archaic (ca. 6000 – 3500 B.C.)	0	1	1
Late Archaic (ca. 4000 – 700 B.C.)	2	2	4
Unidentified Archaic	0	1	1
Woodland	**0**	**43**	**43**
Early Woodland (ca. 1000 – 200 B.C.)	0	4	4
Middle Woodland (ca. 200 B.C. – A.D. 600)	0	4	4
Late Woodland/Late Prehistoric (ca. A.D. 500 – 1650)	0	8	8
Unidentified Woodland	0	27	27
Mississippian	**0**	**2**	**2**
Protohistoric/Contact	**0**	**5**	**5**
Historic (post A.D. 1650)	**74**	**18**	**92**
Unknown	**0**	**25**	**25**
Total	**99**	**214**	**313**

Table 25: Documented Points Within Newton County.
(* indicates point added from this survey).

Cultural Period	Projectile Point Types
Paleoindian	
Early Archaic	Palmer, Charleston Corner Notched, Rice Lobed, MacCorkle Stemmed, Kirk, Kanauha Stemmed, St. Albans Side Notched, Thebes
Middle Archaic	Graham Cave side-notched
Late Archaic	Matanzas, Table Rock Stemmed, Riverton, Merom cluster, Brewerton eared-notched, Matanzas side notched**, Brewerton Side Notched*
Terminal Late Archaic	Genesee cluster
Early Woodland	Adena stemmed, Motley
Middle Woodland	Affinis Snyder, (lamellar blades)
Late Woodland	Madison, Unclassified Side Notched, Unclassified Corner Notched, Unclassified Flared Stem

Precontact settlement within Newton County is dominated by Archaic and Woodland cultural periods, followed by Late Archaic and Late Woodland cultural periods. Very little information has been recovered for the Early and Middle Archaic, Early and Middle Woodland, and Paleoindian cultural phases. These results are likely skewed for several reasons. The presence of the marsh surrounding Beaver Lake in the area during most human occupation is undoubtedly the largest factor in the dearth of artifacts recovered both in this survey and in previous surveys of Newton County. Prior to draining of the marsh and Beaver Lake, it would have provided an extremely limited area for habitation. Identifying more of these areas in the future will be key to recovering the quality and quantity of artifacts necessary to understanding how habitation in, and use of, the area has changed over time. Large scale change in local geomorphology, especially as a result of changes in wetlands extent and location, can also affect

which areas have high site potential for a given time period. Knowledge of these changes will allow researchers to look differentially in specific areas to target one or a few distinct cultural phases depending on the expected available landforms for the period of interest. Another reason the cultural phase representations may be skewed is due to development. Newton County is primarily farm land, and as such remains largely within the private sector. Compared to other counties, Newton County has had less archaeology conducted as a result of federal requirements or state regulations. These archaeological surveys have helped build the cultural chronology in other counties by requiring investigations in areas that would not have otherwise been targeted by researchers. As a result it is likely that the surveys conducted in Newton County have not been extensive enough or have not sampled enough landforms within the county to locate underrepresented cultural time periods. When these surveys, especially in those areas not typically surveyed, we will begin to reconstruct the history of use, and the differential spatial patterns of exploitation associated with fluctuations of the marsh.

2. *What are the densities and distributions of archaeological sites along the Iroquois River and on Iroquois Till Plain within the county?*

The densities and distributions of sites are important for modeling and prediction. In the current study not only was site distribution tracked by landform and cultural period, but the amount of the surface that was covered by individual sites was used to demonstrate the percentage of utilized surface by landform (Table 26, Table 27, and Table 28). For example, five small lithic scatters on a given landform may utilize a smaller portion of the landscape than one large lithic scatter on another landform. The percentage of utilized landscape may provide a further refined perspective of how settlement occurred within the research universe.

Newton County is predominantly comprised of till plain/moraine landform, and all eight of the Survey Areas investigated in this project were found on this landform with Survey Areas 2 and 3 also partially located on floodplains. The major waterways in Newton County are the Kankakee River and the Iroquois River. Smaller waterways, exposed more formally with the draining of the Beaver Lake marsh area, feed these larger bodies by crisscrossing the county leading to a high proportion of floodplain features in the area (Barnes and Osterholz 1998:2-6). Of the two large waterways, the Iroquois River is the dominant in the southern half of Newton County and as such was the one exclusively encountered. Much of the previous smaller waterways have also been drained to access more agricultural land and are now referred to as ditches.

Although very limited, the results from the 902.84 acres of the FY2014 HPF Grant survey show a Late Archaic presence in the southern portion of the county. No evidence of the Paleoindian or Woodland presence was recovered in this survey. Eighty two percent of the sites discovered in this survey were located on till plains/moraines, which has soils associated with

upland features. There were two survey areas and 18 percent of the total sites located close to the river located partly on floodplains. The location of projectile points further north and south of the river could indicate use of upland features more for hunting rather than habitation purposes. This interpretation however should be viewed more as a hypothesis for future investigation as opposed to a formal assertion as more than two-thirds of the surveyed area was on till plains and moraines, which was due to limited permission and visibility issues. This disproportionate percentage of upland landform surveyed needs to be kept in mind when comparing results to previous HPF grant surveys conducted (Macleod and Donovan 2014; Swihart and Nolan 2013, 2014). Aside from the Late Archaic period, the settlement patterns for different prehistoric cultural contexts are impossible to analyze due to the lack of recovered diagnostic materials during our surveys in the southern portion of the county. The fact that survey was limited to a majority of upland landforms means that the sample of the archaeological record in Newton County obtained during our efforts is mostly representative of one type of taphonomic, geomorphic, and pedogenic process, that is, the till plain/moraine setting. That this is the dominant landform/setting of the county does not help in elucidating broader patterns.

Table 26: Projectile Point Site Numbers and Cultural Periods Per Landform.

Landform	Sites and Cultural Periods
Till Plain and Moraines	12-N-75 (Late Archaic) 12-N-284 (Late Archaic)

Table 27: Site Densities and Distributions By Landform.

Landform	# of acres	# of sites	Density	Distribution
Till Plains/Moraines	836.92	73	1 site per 11.46 acres	Sites cover 3.21% of surface area
Floodplains	65.92	16	1 site per 4.12	Sites cover 8.31% of surface area

Table 28: Number of Artifacts per Landform.

Landform	# of artifacts	% of artifacts recovered
Till Plain/Moraines	1069	80.4%
Floodplains	260	19.6%

The majority of sites were discovered on silty clay loam and silt loam texture soils. A total of 28.10 percent of sites are located on silt loams (n=25), 39.33 percent of sites are located on silty clay loams (n=35), 13.48 percent of sites are located on loam (n=12), 17.98 percent of sites are on sandy loam (n=16), and 1.12 percent of sites were located on muck (n=1).

Moderately poorly drained soils (n=31) were the predominant drainage class with 34.83 percent of the sites occurring on these types of soils. A total of 33.71 percent of sites were found on moderately well drained soils (n=30), 28.1 percent of sites were found on somewhat poorly drained soils (n=25), 2.25 percent of the sites occurring on very poorly drained soils (n=2), and only 1.12 percent of sites were found on well drained soils (n=1).

3. What is the settlement pattern for Euro-American people along the Iroquois River?

The historic cultural context was present in Survey Areas 2-8 and was representative of the initial mid-19th century settlement of the county thru modern times. Mean dates were taken for each survey area by using artifacts that displayed a date range (Table 29). This excluded non-diagnostics and anything with unanchored parameters (i.e. pre-1940). Results indicate that the majority of survey areas were most likely active during the late 19th and early 20th centuries. This is corroborated by the mean historic date of the whole survey which was 1899. Both of these pieces of information are in keeping with the literature narrative concerning the draining of Beaver Lake beginning in the 1850s and completed by 1880 (Barnes and Osterholz 1998:2). This draining progressively opened up the county for farming during this period and as such makes sense that most historic artifacts would date to this time. All survey areas are within the Iroquois River drainage system, with some survey areas were located directly along the river (Figure 92).

Table 29: Survey Area Mean Dates for Historic Artifacts

Survey Area	Mean Date
Survey Area 1	N/A
Survey Area 2	1904
Survey Area 3	1895
Survey Area 4	1901
Survey Area 5	1905
Survey Area 6	1925
Survey Area 7	1909
Survey Area 8	1854
All Survey	**1899**

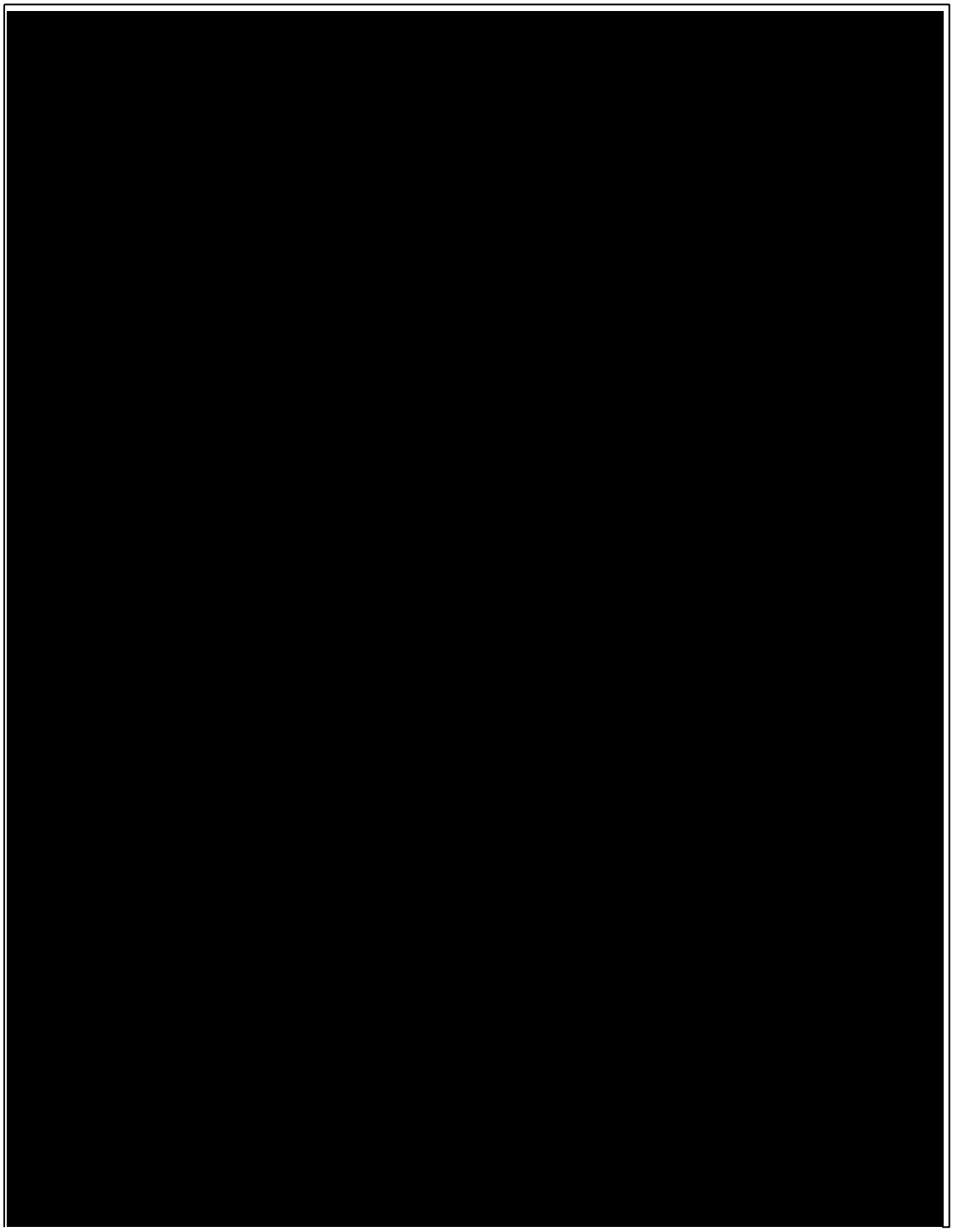


Figure 92: Distribution of Survey Areas from the FY2014 survey on an aerial (Indiana Data Spatial Service) of Newton County.

4. *What is the average site density within the county?*

Before this survey there were 214 documented sites in the county (Volume 2, Appendix A). Upon completion of the survey, 89 sites were added to the site database making the total 303 sites in Newton County. For this survey, the average positive survey site density encountered was one site per 10.14 acres with survey area densities ranging from one site per 144.61 acres (SA8) to one site per 3.44 acres (SA6) with one negative survey encountered (SA1). Although previous indications of density vary, prior surveys have indicated a positive ratio survey of one positive survey per 3.15 surveys conducted. If we evaluate our survey areas as individual surveys, our ratio of successful surveys for this study is one positive survey per 1.14 surveys conducted. Though the ratio of successful surveys for this study is low, this could be due to the large amount of land and high visibility. Conversely the higher ratio shown by the previous surveys may be influenced by low survey acreage, different methodologies, or poor field conditions.

5. *Is there evidence for interaction between Euro-American settlers and Native American tribes at and after the time of settlement?*

Ten sites discovered (8.9 %) in this survey displayed multiple components. None of these multicomponent sites contained any diagnostic prehistoric artifacts, but all contained both prehistoric and historic components. Lack of dateable prehistoric artifacts dating later than the Late Archaic period and the very rare presence of artifacts dating to the early to mid-1700s shows very little evidence of Euro-American and Native American interaction outside of what is already documented in the historical record. Much of the native Potawatomi population was removed by 1838 and Newton County was not widely populated by Euro-Americans until the 1860s. This survey did not recover any material that conclusively indicated interaction between Euro-American and Native American peoples.

Conclusions and Recommendations

This project primarily targeted major waterways, particularly the Iroquois River, as well as adjacent upland areas in the southern half of Newton County, Indiana. The project area was selected due to the lack of known archaeological sites in the SHAARD database and the identification of Newton County as a data deficient county. The goals of the project were to increase the site database, construct a more complete cultural chronology for the county, understand and refine both the settlement patterns, as well as the patterns of interaction between and among early Euro-American settlers and Native Americans.

Newton County displayed a lack of artifacts as compared to similar county surveys in Indiana. This is similar to the results of previous surveys conducted in and around Newton County (Angst 1994; Cree 1991b; Cree et al. 1994; James and Cochran 1985; Macleod and Donovan 2014; McCord 2007; Miller et al. 2012; Miller 2013; Murray et al. 2011; Surface-Evans et al. 2005). It is very likely that the presence of Beaver Lake and the various wetlands during prehistoric times and into the mid-1800s heavily influenced the habitability of the area. The wetlands were a great source of resources for the prehistoric people of the area, who tended to settle along the Iroquois river and near Beaver Lake, but located more towards the south (Heistand 1951:8-10). However, the variably extensive wetlands would have dramatically restricted both livable land and resources in the area for the incoming Euro-American settlers during the historic period. This constraint would have concentrated those individuals who were there to select upland and well drained features in order to avoid the marshlands that were so prevalent throughout the county. The large scale changes to the environment brought about by the historic draining of Beaver Lake brought in a relatively late Euro-American settlement pushing the majority of the historic settlement dates to much later in the 19th century. Before the draining, much of the Euro-American settlements were located along streams in the southern portions of the county (Heistand 1951:10-11). This draining also allowed for investigation into areas that may have been exposed prehistorically and therefore offer insights into the habitation preferences of prehistoric peoples as well as the dynamic nature of the extent and location of the wetlands through time (Figure 93).

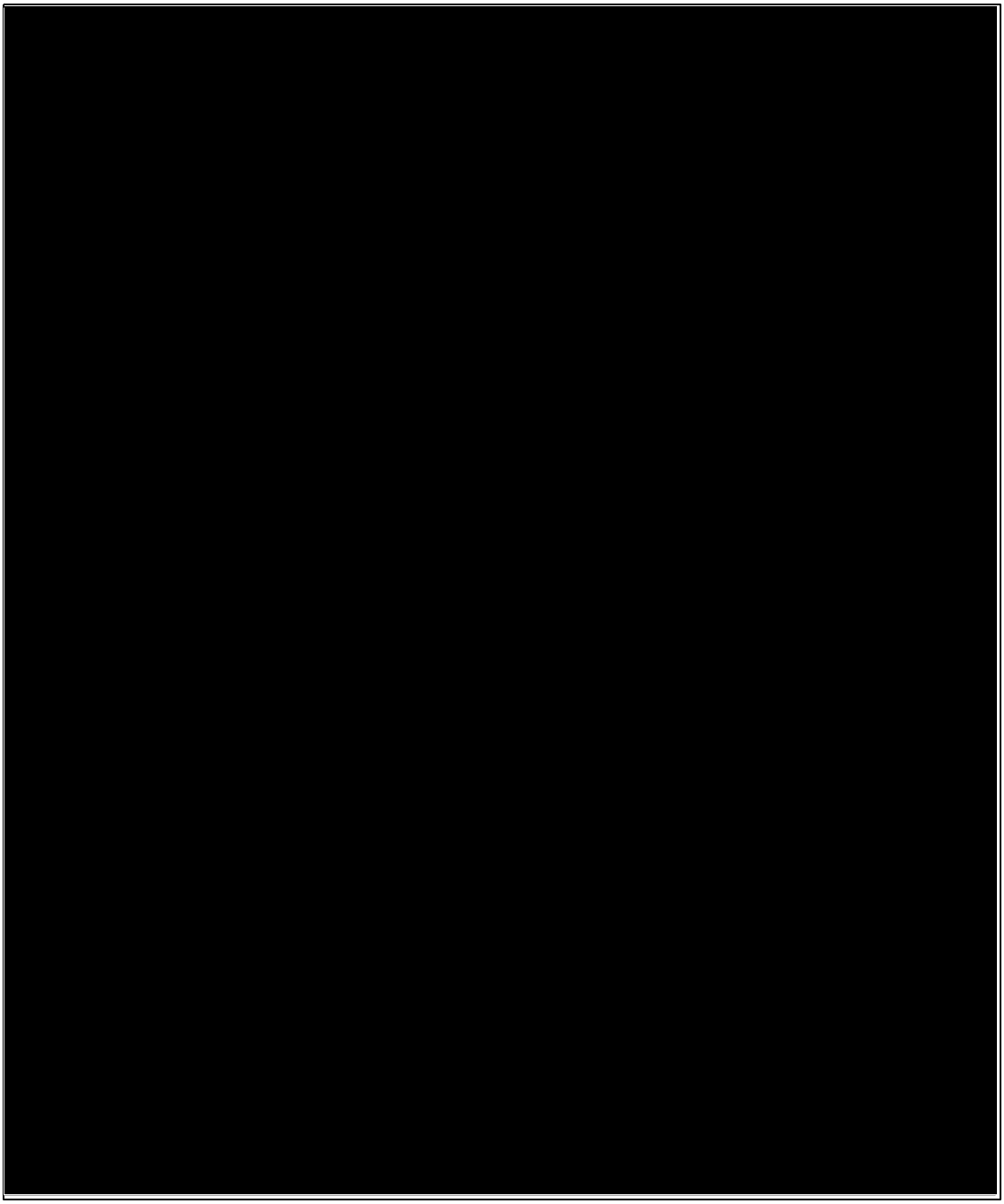


Figure 93: 1832 location of Beaver Lake in Newton County in relation to the Survey areas (Heistand 1951).

The two diagnostic prehistoric artifacts recovered from the survey areas date to the Late Archaic period. Though the amount of recovered prehistoric diagnostics from the survey is not enough to make generalizations regarding occupation habits, we may be able to use this information in order to identify the use of the land during the Late Archaic period. The points were found in areas located both north and south of the Iroquois River in the uplands. Since

prehistoric habitation sites would have been located closer to a water source, the location of the points so far from the river could indicate that those areas were used as hunting grounds (Figure 94). While tentative, this relationship between the Late Archaic is similar to the preponderance of Late Archaic occupancy along the Kankakee Marsh in Lake County (Surface-Evans 2015; Surface-Evans et al. 2005) and somewhat matches the Carlson collections relatively large number of stemmed points.

The Carlson Collection also highlights several other important areas of information that is sparse or entirely absent in the official records. Without incorporating the knowledge contained in private collections, we can never hope to fully reconstruct the prehistory and history of the regions we target to understand.

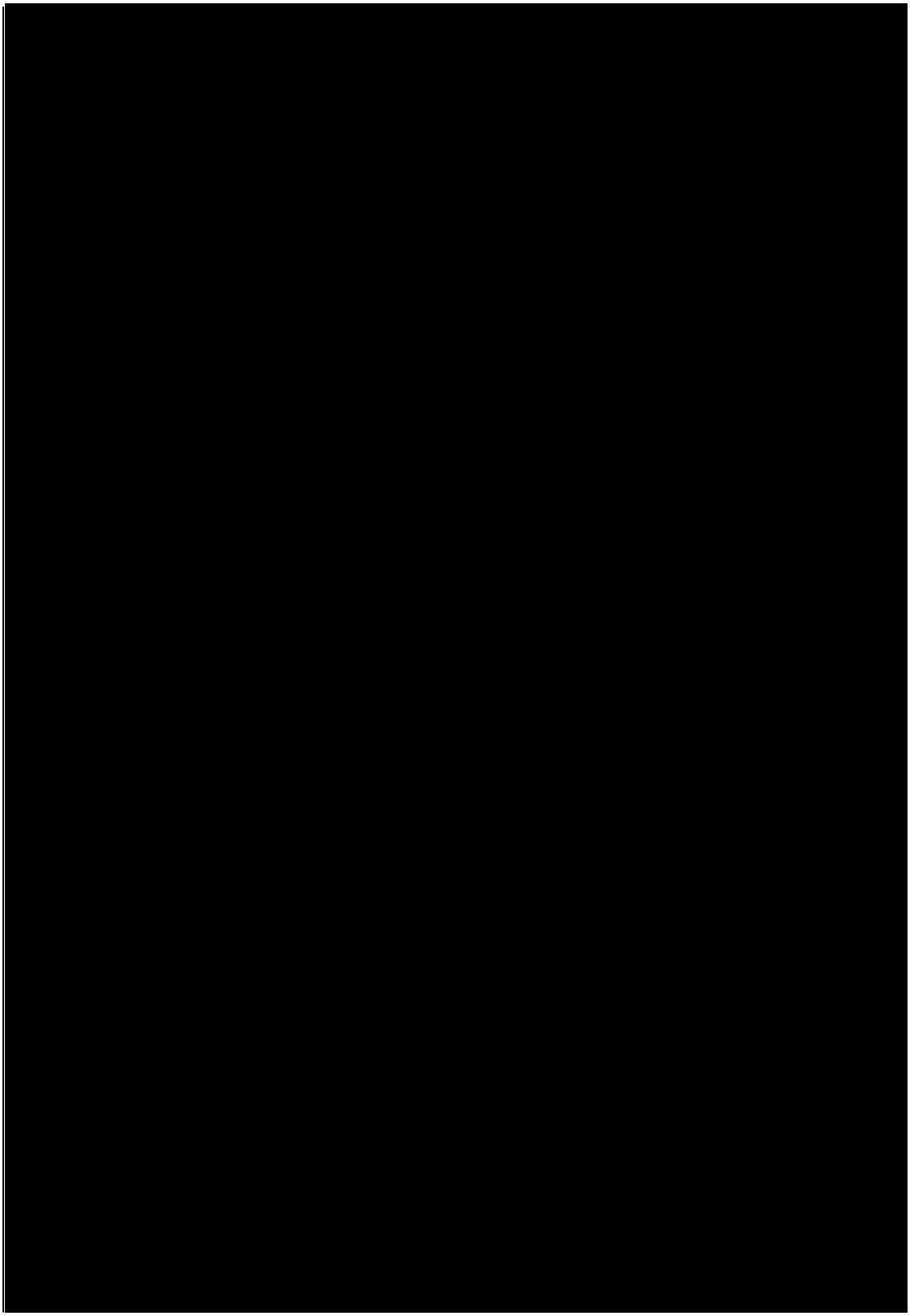


Figure 94: Survey Areas with Projectile Points locations north and south of the Iroquois River (Indiana Spatial Data Service).

The majority of the precontact sites were unable to be identified by cultural period, however one prehistoric cultural period, the Late Archaic, was documented. One historic site (12-N-90) was recommended for further investigation and 88 sites were recommended as not eligible for listing on the Indiana Register of Historic Sites and Structures or the National Register of Historic Places. An anomalously high density of historic artifacts in the western area of Survey Area 5 indicates that further research into this area is would be beneficial a more complete understanding of the historic settlement of Newton County.

The surveys conducted in Newton County are unable to be compared to those of other Indiana counties whose results show a greater evidence of land use in upland areas because of the disproportionate survey of upland features in Newton County (Macleod et al. 2015; Swihart and Nolan 2014). Much of the evidence of land use discovered on the floodplain areas consisted of historic artifacts with very little prehistoric artifacts recovered and no diagnostic prehistoric artifacts recovered. Due to the vast majority of surveys being located on upland landforms it is difficult to make a comparison to the occupation patterns as found on other varieties of landforms. For the future, survey of a greater variety of landforms would be beneficial in expanding the knowledge of occupation patterns across the county and making inferences about upland feature occupation preferences.

Many factors could have influenced the project data including the location of the surveyed properties, whether a field was tilled recently or not, the collection of fields by lithic enthusiasts and even local weather patterns prior to field survey. Further research into prehistoric landform usage is recommended within Newton County.

Newton County would benefit from further archaeological investigations, especially those focusing on the procurement of diagnostic prehistoric materials and systematization of landform use prehistorically. Included in this should be further large scale pedestrian surveys to complement the findings in this report as well as identify potentially new areas of interest. Particularly surveys that attempt to capture representative samples of the topographic, geomorphic, hydric, and texture properties of landforms and soils given the peculiar hydrological history of this area and the already documented peculiar distribution of archaeological materials in this portion of the state (Macleod et al. 2015; Surface-Evans 2015; and this report). Surveys designed in this way could add not only to our understanding of shifting resource procurement and settlement strategies throughout prehistory, but could also be used to hypothesize changes in overall drainage properties of the region related to the formation of the various marshes, and marsh-like environments that predominated in this region.

References Cited

Abrams, Elliot

2009 Hopewell Archaeology: A View from the Northern Woodlands. *Journal of Archaeological Research* 17:169-204.

Adderly, Anthony W.

1996 *Archaeological Records Search, Reconnaissance and Recommendations, Construction of a Recreational Pond in Central Newton County, Indiana*. Indiana State University, Terre Haute, Indiana.

2002 *Archaeological Records Review and Phase 1a Field Reconnaissance for Curtis Creek Site County Road 550 East Newton County, Indiana*. Sagamore Environmental Services, Inc., Indianapolis, Indiana.

Andreas, A.T.

1876 *Maps of Indiana Counties in 1876*. Baskin, Forester & Co., Chicago, Illinois.

Andrefsky, William J.

2005 *Lithics: Macroscopic Approaches to Analysis*. Second Edition ed. Cambridge University Press, United Kingdom.

Angst, Michael

1994 *An Archaeological Survey of Fayette County*. Reports of Investigation 40. Archaeological Resources Management Service, Ball State University, Muncie, Indiana.

1997 *Rush County, Indiana: Predicting the Potential for Surface and Subsurface Archaeological Site*s. Reports of Investigation 46. Archaeological Resources Management Service, Ball State University, Muncie, Indiana.

1998 *Newton County Community Center Newton County, Indiana.* Archaeological Resources Management Services, Ball State University, Muncie, Indiana.

Anslinger, Michael C.

1993 *Archaeological Records Review and Recommendation, INDOT Project ST-019-1(), Des. 29805, Replacement of Structures Carrying U.S. 41 over Bogus Island Ditch, Newton County, Indiana.* Indiana State Univeristy, Terre Haute, Indiana.

Barnes, James R. and Larry C. Osterholz.

1998 *Soil Survey of Newton County, Indiana*. United States Department of Agriculture, Washington, D.C.

Beard, Thomas C.

1991 *Archaeological Field Reconnaissance INDOT Project ST-1441-1 (D) Replacement of Two Small Structures on U.S. 24 East of U.S. 41 in Newton County, Indiana.* Lebanon, Indiana.

1994 *Archaeological Field Reconnaissance INDOT Project BRS-5356(004)/BRS-3745(003) Proposed Wetland Replacement Area Along SR 55 South of the Kankakee River in Newton County, Indiana.* Landmark Archaeological and Environmental Services, Inc., Lebanon, Indiana.

Beazley, Matthew and Dina M. Bazzill

2013 *Archaeological Assessment TCNS ID #91020 Proposed 260-Foot (Overall Height) Self-Supporting Lattice Telecommunications Structure within an Approximate 90-foot by 90-foot (27m by 27m) Lease Area SBA-IN20054-A (Enos Tower #1).* Environmental Corporation of America, Alpharetta, Georgia.

Bechert, Charles H. and John M. Heckard

1966 Ground Water. In, *Natural Features of Indiana*. Edited by Alton A. Lindsey. Indiana Academy of Science, Indianapolis, Indiana.

Bellis, James O.

1979 *Report of the Archaeological Reconnaissance of Project No. ST-674 "WW" LaSalle State Fish & Wildlife Area in Newton County, Indiana.* Notre Dame University, Notre Dame, Indiana.

1984 *Report of the Archaeological Reconnaissance for the Newton County Bridge No. 57 on County Road 700 North Over Beaver Lake Ditch.* Department of Anthropology, Notre Dame University, Notre Dame, Indiana.

Bennett, John W.

1952 The Prehistory of the Northern Mississippi Valley. In *Archaeology of Eastern United States*, edited by JB Griffin, pp. 108-123. University of Chicago Press, Chicago.

Bennett, Stacy N.

2000 *Phase 1a Archaeological Field Reconnaissance: INDOT Project Stp-9956(), Des. #9506860: Rehabilitation of CR 600E from SR 10 to CR 1200N, Newton County, Indiana.* Landmark Archaeological and Environmental Services, Inc., Sheridan, Indiana.

Benson, L., T. R. Pauketat, and E. Cook.

2009 Cahokia's Boom and Bust in the Context of Climate Change. *American Antiquity* 74: 467–483

Black, Glenn A.

1936 Excavation of the Nowlin Mound. *Indiana History Bulletin* 13(7):207-305. Indianapolis, Indiana.

Black, Max.

2005 *Archaeological Field Reconnaissance Newton County Well Project Newton County, Indiana.* Archaeological Resources Management Services, Ball State University, Muncie, Indiana.

Black, Max and Shaun Miller

2003 *County Road 700 North Newton County, Indiana Archaeological Field Reconnaissance.* Archaeological Resources Management Services, Ball State University, Muncie, Indiana.

Bond, Gerard., Bernd Kromer, Juerg Beer, Raimund Muscheler, Michaeol N. Evans, William Showers, Sharon Hoffmann, Rusty Lotti-Bond, Irka Hajdas, Georges Bonani

2001 Persistent Solar Influence on North Atlantic Climate Change during the Holocene. *Science* 294:2130-2136.

Brammer, Beth N.

1995 *Archaeological Field Reconnaissance: Proposed Wastewater Project for Morocco, Newton County, Indiana.* Landmark Archaeological and Environmental Services, Inc., Lebanon, Indiana.

Burkett, Frank N.

1993 *Archaeological Reconnaissance for INDOT Project: STP-3856() Replacement of SR 16 Bridge over Iroquois River in Newton County.* Indiana Department of Transportation, Indianapolis, Indiana.

Burkett, Frank M. and Ronald Hicks

1986 *Archaeological Investigations of the Upper Big Blue River Glacial Sluiceway.* Reports of Investigation 21. Archaeological Resources Management Service, Ball State University.

Callendar, Charles
1978 Miami. In *Handbook of North American Indians,* Vol. 15 "Northeast" edited by Bruce. G Trigger, the Smithsonian Institution, Washington D.C.
Callendar, Charles, Richard K. Pope, and Susan M. Pope
1978 Kickapoo. In *Handbook of North American Indians,* Vol. 15 "Northeast" edited by Bruce. G Trigger, the Smithsonian Institution, Washington D.C.
Cantin, Mark
1995 *Archaeological Reconnaissance and Recommendations, INDOT Project ST-019-1(), Des. 9229805, Replacement of Structure Over Bogus Island Ditch on US 41, Newton County, Indiana.* Indiana State University, Terre Haute, Indiana.
2005 *Provenience, Description, and Archaeological Use of Selected Chert Types of Indiana.* Technical Report No. 05-01, Indiana State University Anthropology Laboratory, Terre Haute, Indiana.
2008 *Provenience, Description, and Archaeological Use of Selected Chert Types of Indiana*. Technical Report No. 05-01, Indiana State University Anthropology Laboratory, Terre Haute, Indiana.
2011 Chert Types of Indiana. Paper presented at the March 2011 Indiana Archaeology Council Spring Workshop. Strawtown, Indiana.
Carmony, Donald F.
1998 *Indiana 1816 to 1850: The Pioneer Era (History of Indiana).* Indiana Historical Society, Indianapolis, Indiana.
Clifton, James A.
1978 Potawatomi. In *Handbook of North American Indians,* Vol. 15 "Northeast" edited by Bruce. G Trigger, the Smithsonian Institution, Washington D.C.
Cochran, Blake
2006 *Archaeological Reconnaissance Kentland Municipal Airport Newton County, Indiana.* Archaeological Resources Management Services, Ball State University, Muncie, Indiana.
Cochran, Donald R. and Kelly Cox
1977 *Federal Aid Secondary Project No. OS099-56(2) F.A.S. Route County Road 525 E Newton Bridge #151 Over Iroquois River, Newton County, Indiana.* Archaeological Resources Management Services, Ball State University, Muncie, Indiana.
Cochran, Donald R., Kris D. Richey and Lisa A. Maust
1990 Early PaleoIndian Economies in the Glaciated Regions of Indiana. *Research in Economic Anthropology*, Supplement 5, edited by Kenneth B. Tankersley and Barry L. Isaac, pp. 143-159. JAI Press Inc., Greenwich Connecticut.
Cochran, Donald and Jeanette Buehrig
1985 *An Archaeological Survey on the Wabash Moraine: A Study of Prehistoric Site and Artifact Density in the Upper Wabash Drainage*. Reports of Investigation 15. Applied Anthropology Laboratories, Ball State University, Muncie, Indiana.
Conover, Diana R.
1983 *Archaeological Records Review Newton County Bridge 147 Newton County, Indiana.* Archaeological Resources Management Services, Ball State University, Muncie, Indiana.
1985a *Archaeological Records Review Goodland Water Utility Extension Newton County, Indiana.* Archaeological Resources Management Services, Ball State University, Muncie, Indiana.

1985b *Archaeological Field Reconnaissance Willow Slough Fish Wildlife, Newton County, Indiana.* Archaeological Resources Management Services, Ball State University, Muncie, Indiana.

1986a *Archaeological Records Review Newton County Road 1300 South Newton County, Indiana.* Archaeological Resources Management Services, Ball State University, Muncie, Indiana.

1986b *Archaeological Records Review Roselawn Postal Building, Roselawn Gardens Subdivision Newton County, Indiana.* Archaeological Resources Management Services, Ball State University, Muncie, Indiana.

1986c *Amendment to Archaeological Records Review Newton County Road 1300 South Newton County, Indiana.* Archaeological Resources Management Services, Ball State University, Muncie, Indiana.

1988 *A Reconnaissance Level Survey of the Valley Corridor of the Upper West Fork of the White River in Madison County, Indiana*. Archaeological Resources Management Service, Ball State University, Muncie.

Coon, Matt

2008 *An Archaeological Records Check and Phase 1a Field Reconnaissance: Two Small Structure Replacements on SR 18 over Gruden Ditch (De. Nos. 0201032 and 0201033), Newton County, Indiana.* Cultural Resources Services Indiana Department of Transportation, Indianapolis, Indiana.

2010 *SR 10 Superstructure Replacement over Best Ditch, 3.28 miles west of SR 41.* INDOT, CRS, Indianapolis, Indiana.

2012a *An Archaeological Records Check and Phase 1a Reconnaissance Survey: INDOT LaPorte District Unit Permits in Carroll, Cass, Fulton, Jasper, Lake, LaPorte, Marshall, Newton, Porter, Pulaski, and St. Joseph Counties, Indiana.* Cultural Resources Office INDOT Environmental Services, Indianapolis, Indiana.

2012b *SR 114 Pipe Line Over Unnamed Tributary to Zabrosky Ditch, 1.47 Miles East of US 41, Newton County, Indiana.* INDOT, CRO, Indianapolis, Indiana.

Cree, Donald W.

1991a *Archaeological Field Reconnaissance Goodland Senior Citizen Apartment Project Newton County, Indiana.* Archaeological Resources Management Services, Ball State University, Muncie, Indiana.

1991b *An Archaeological Database Enhancement Project: A Survey of Hamilton and Marion Counties, Indiana.* Reports of Investigation 31. Archaeological Resources Management Service, Ball State University, Muncie.

Cree, Donald W., Randy Gaw, Gerald Waite, Lisa Paylo and Donald R. Cochran

1994 *Historic and Prehistoric Contexts in the Tipton Till Plain*. Reports of Investigation 36. Archaeological Resources Management Service, Ball State University, Muncie.

Delcourt, Hazel R. and Paul A. Delcourt

1991 *Quaternary Ecology*: A Paleoecological Perspective. Chapman & Hall, London, England.

DeRegnaucourt, Tony

1976 *Archaeological Reconnaissance of Indiana State Highway 10 from Roselawn, Indiana to the Intersection of State Road 110, Project Number S-883(4) in Newton and Jasper Counties, Indiana*. Upper Miami Valley Archaeological Research Museum, Arcanum, Ohio.

1982 *Archaeological Reconnaissance of the Site for a New Salt Storage Building at the Kentland Maintenance Unit Center in Newton County, Indiana.* Upper Miami Valley Archaeological Research Museum, Arcanum, Ohio.

DeRegnaucourt Tony, and Jeff Geogiady

1998 *Prehistoric Chert Types of the Midwest.* Western Ohio Podiatric Medical Center, Greenville, Ohio.

Division of Historic Preservation and Archaeology

2012 *Indiana's Cultural Resources Management Plan For 2013 to 2019.* http://www.in.gov/dnr/historic/files/hp-IndianaStatePlan2013-2019.pdf. Accessed May 15, 2014.

2014 State Historic Architectural and Archaeological Research Database (SHAARD). Electronic Database, https://secure.in.gov/apps/dnr/shaard/welcome.html, accessed March 2015.

Donaldson, Joshua A.

2013 *Archaeological Records Check, Rehabilitation of Lake County Bridge No. 36, Carrying State Line Road Over the Kankakee River, Lake and Newton Counties, Indiana and Kankakee County, Illinois.* Applied Anthropology Laboratories, Ball State University, Muncie, Indiana.

Dorwin, John T.

1966 *Fluted Points and Late-Pleistocene Geochronology in Indiana.* Indiana Prehistory Series, Volume IV, Number III. Indiana Historical Society, Indianapolis, Indiana.

Eichenlaub, Val

1979 *Weather and Climate of the Great Lakes Region*. University of Notre Dame Press, South Bend, Indiana.

Evans, Dallas

1990 *Archaeological Resources Management Services Bridge Over the Kankakee River Newton County, Indiana.* Archaeological Resources Management Services, Ball State University, Muncie, Indiana.

Fabyan, E.J.

ca. 1976-1979 *Archaeological Reconnaissance of Project: RS-4256(1) Newton County.* Muncie, Indiana.

1979 *Archaeological Reconnaissance of Indiana State Highway Commission Project ST-5356(A) SR 55 Newton County, Indiana.* IN State Highway Commission, Muncie, Indiana.

1982 *Supplemental Archaeological Reconnaissance of Indiana Department of Highways Project: S-883(4) State Road 10 to State Road 110, Newton and Jasper Counties, Indiana.* IN State Highway Commission, Muncie, Indiana.

Faulkner, Charles H.

1972 The Late Prehistoric Occupation of Northwestern Indiana: A Study of the Upper Mississippi Cultures of the Kankakee Valley. *Indiana Historical Society* 5(1):13-222. Indianapolis, Indiana.

Gammon, James R. and Shelby D. Gerking

1966 Fishes. In, *Natural Features of Indiana*, edited by Alton A. Lindsey, pp. 401-425. Indiana Academy of Science, Indianapolis, Indiana.

General Land Office Surveys

1795−1840 Microfilm on file at Applied Anthropology Laboratories, Ball State University, Muncie, Indiana.

Geo. A. Ogle & Co

1916 *Standard Atlas of Newton County, Indiana: Including a Plat Book.* Geo. A. Ogle & Co. Chicago, Illinois.

Gray, Henry H. and Kim Sowder

2002 Indiana_Physiographic_Regions: Physiographic regions of Indiana (Indiana Geological Survey, 1:2,150,000, Polygon Shapefile) Geospatial_Data_Presentation_Form: Map. Indiana Geological Survey, Bloomington, Indiana.

Grayson, Donald K. and David J. Metzler

2003 A Requiem for North American Overkill. *Journal of Archaeological Science* 30:585-593. Oxford, United Kingdom.

Greenhouse, Barry D., William I. Roberts, John W. Matthews, Gerald P. Smith, Paula M. Crowley, and R. Diane Hammonds

2000 *Archaeological Survey and Testing Walstra Cellular Tower Site Demotte, Newton County, Indiana.* Greenhouse Consultants, Inc., Atlanta, Georgia.

2001a *Phase 1a Cultural Resources Reconnaissance Survey Whaley Farm Cellular Tower Site (SAC-1703A) Kentland, Newton County, Indiana.* Greenhouse Consultants, Inc., Atlanta, Georgia.

2001b *Phase 1a Cultural Resources Reconnaissance Survey Molson Farm Cellular Tower Site (SAC-1701A) Morocco, Newton County, Indiana.* Greenhouse Consultants, Inc., Atlanta, Georgia.

2001c *Phase 1a Cultural Resources Reconnaissance Survey Dorn Farm Cellular Tower Site (SAC-1700B) Lake Village, Newton County, Indiana.* Greenhouse Consultants, Inc., Atlanta, Georgia.

Greenlee, Diana M.

2002 Accounting for Subsistence Variation among Maize Farmers in Ohio Valley Prehistory. Ph.D. Dissertation, Department of Anthropology, University of Washington, Seattle, Washington.

Greenlee, Rachel J.

2007 *An Archaeological Records Check and Phase 1a Field Reconnaissance: A Proposed Bridge Replacement on SR 55 Over Moffitt Ditch (INDOT Des. No. 0301053) in Lincoln Township, Newton County, Indiana.* Cultural Resources Section, Indiana Department of Transportation, Indianapolis, Indiana.

Guernsey, E.Y.

1932 Indiana: the Influence of the Indian upon its history... (map). Department of Conservation, Indianapolis.

Gutshick, Raymond C.

1966 Bedrock Geology. In, *Natural Features of Indiana*, edited by Alton A. Lindsey, pp. 1-20. Indiana Academy of Science, Indianapolis, Indiana.

Hale, Malcolm D.

1966 Lakes and Streams. In, *Natural Features of Indiana*, edited by Alton A. Lindsey, pp. 91-99. Indiana Academy of Science, Indianapolis, Indiana.

Hart, John P.
1999 Maize Agriculture Evolution in the Eastern Woodlands of North America: A Darwinian Perspective. *Journal of Archaeological Method and Theory* 6(2):137-180.
Heistand, Joseph E.
1951 *An Archaeological Report on Newton County Indiana*. Indiana Historical Bureau, Indianapolis, Indiana. Reprinted in 2005 by the Newton County Historical Society, Family History Division.
Helmkamp, Criss R.
2000 *Archaeological Records Check: INDOT Project STP-9956, Des. No. 9506860, Rehabilitation of CR 600E from SR 10 to CR 1200N, Newton County, Indiana.* Purdue University, West Lafayette, Indiana.
Helmkamp, Criss R. and Katherine S. Canne
2001 *Archaeological Records Check: INDOT Project ST-3856(1), Des. No. 9704030, Small Structure Replacement on SR 16 over Unnamed Tributary of the Iroquois River, Newton County, Indiana.* Purdue University, West Lafayette, Indiana.
Helmkamp, Criss R. and Matthew S. Coon
1999 *Archaeological Records Check Reconnaissance Survey: INDOT Project ST-144-1(), Small Structure Replacement on US 24 Over Morrison Ditch, Des. No. 8824915, Newton County, Indiana.* Cultural Resource Management Program, Purdue University, West Lafayette, Indiana.
Holloway, Richard and Vaughn M. Bryant, Jr.
1985 *Late-Quaternary Pollen Records and Vegetational History of the Great Lakes Region: United States and Canada. In Pollen Records of Late-Quaternary: North American Sediments* edited by Vaughn M. Bryant, Jr. and Richard G. Holloway. pp. 245-280 American Association of Stratigraphic Palynologists Foundation, Austin, Texas.
Holycross, David N.
1997 *Archaeological Records Review and Recommendations Project ST-5356(F), Des. 8657710, Replacement of Small Structure Over Weiss Ditch on SR 55, Iroquois Township, Newton County, Indiana.* Indiana State University, Terre Haute, Indiana.
2001 *Archaeological Records Review, Reconnaissance, and Recommendation, Project ST-4956(), Des. 9701700, SR 55 Bridge Replacement over Burgess Ditch, 1.30km South of US 24, Newton County, Indiana.* Indiana State University, Terre Haute, Indiana.
Horn, Johnathon C.
2005 *Historic Artifact Handbook.* Alpine Archaeological Consultants, Inc., Montrose, Colorado.
Hutchinson, Stacie
1986 *Archaeological Records Review Small Structure Replacement on State Road 16 (Project# RS-3856()) Newton County, Indiana.* Archaeological Resources Management Services, Ball State University, Muncie, Indiana.
IMACS
1984 *Intermountain Antiquities Computer System (IMACS) User Guide*. Bureau of Land Management, Utah State Office, Salt Lake City, Utah.
1992 *Intermountain Antiquities Computer System (IMACS) User Guide*. Bureau of Land Management, Utah State Office, Salt Lake City, Utah.
2009 *Intermountain Antiquities Computer System (IMACS) User Guide*. Bureau of Land Management, Utah State Office, Salt Lake City, Utah.

James, Mary Lou and Donald R. Cochran
1985 *An Archaeological Survey of Jay County, Indiana*. Reports of Investigation 18. Archaeological Resources Management Service, Ball State University, Muncie.
Jones, James R. and Amy L. Johnson
2008 *Early Peoples of Indiana*. Department of Natural Resources, Division of Historic Preservation and Archaeology, Indianapolis, Indiana.
Justice, Noel
1987 *Stone Age Spear and Arrow Points of the Midcontinental and Eastern United States*. Indiana University Press, Bloomington, Indiana.
2006 *Looking At Prehistory: Indiana's Hoosier National Forest Region, 12,000 B.C. to 1650.* United States Department of Agriculture. Forest Service, Washington, D.C.
Keene, David
2010 *Phase 1a Archaeological Investigations CNG Fueling Station and Pipelines, Fair Oaks, Indiana.* Archaeological Research, Inc., Chicago, Illinois.
Keene, David and Margaret Hayes
2005 *Phase 1a Archaeological Investigations on the Proposed Efroysmson Ecosystem Restoration Project Near Enos, Newton County, Indiana.* Archaeological Research, Inc., Chicago, Illinois.
Kolbe, Beth
1992 *Brookville Lake: An Archaeological Study in the Whitewater Drainage.* Reports of Investigation 35. Archaeological Resources Management Service, Ball State University, Muncie.
King, Brad
2007 *Archaeological Field Reconnaissance Morocco Well Field Newton County, Indiana.* Pioneer Consulting Services, Inc., Muncie, Indiana.
2010 *Archaeological Field Reconnaissance Goodland Ditch Construction Newton County, Indiana*. Pioneer Consulting Services, Inc., Muncie, Indiana,
King, Brad and Mitchell Zoll
2009 *Archaeological Field Reconnaissance Brook Fire Station Newton County, Indiana.* Pioneer Consulting Services, Inc., Muncie, Indiana.
King, Frances B.
1993 Climate, Culture, and Oneota Subsistence in Central Illinois. In, *Foraging and Farming in the Eastern Woodland*, edited by Margaret Scarry, pp. 232-254. University Press of Florida, Gainesville, Florida.
King, R.B.
2009 *Archaeological Field Reconnaissance Lake Village Fire Station Newton County, Indiana.* Pioneer Consulting Services, Inc., Muncie, Indiana.
Kooyman, Brian P.
2000 *Understanding Stone Tools and Archaeological Sites*. University of Calgary Press, Calgary, Alberta.
Kulen, D. and M, Greby
2003 *Phase I Archaeological Survey of the Van Kalker Property, Range Line, Lake County Indiana*. Allied Archaeology, Aurora, Illinois.
Lofstrom, Ted, Jeffrey P. Tordoff, and Douglas C. George
1982 A Seriation of Historic Earthenwares in the Midwest, 1780-1870. *The Minnesota Archaeologist Spring/Summer* 41(1):3-29.

Luedtke, Barbara E.
1992 *An Archaeologist's Guide to Chert and Flint.* Cotsen Institute of Archaeology Press, Los Angeles, CA.
Lumbis, Barbara J.
1984 *Archaeological Records Review Newton County Bridge No. 137 Newton County, Indiana.* Archaeological Resources Management Services, Ball State University, Muncie, Indiana.
Lyon, Marcus W.
1936 Mammals of Indiana. *The American Midland Naturalist 17.*
Macleod, Colin L., Shelbi Long, Christine Thompson, Kevin C. Nolan, and Erin Steinwachs
2015 *An Archaeological Survey of Jasper County: Enhancement of a Data Deficient Region.* Reports of Investigation 87, edited by Christine Thompson and Kevin C. Nolan. Applied Anthropology Laboratories, Ball State University, Muncie, Indiana.
Majewski, Teresita and Michael J. O'Brien
1987 The Use and Misuse of Nineteenth-Century English and American Ceramics in Archaeological Analysis. In *Advances in Archaeological Method and Theory Vol. 11*, edited by Michael B. Schiffer. Academic Press, Inc., San Diego, California.
Mangold, William L.
2003 *Archaeological Investigations at Willow Slough Fish and Wildlife Area.* Indiana Division of Historic Preservation and Archaeology, Indianapolis, Indiana.
2009 The Middle Woodland Occupations of the Kankakee River Valley and Beyond. Unpublished Ph.D. dissertation, Indiana University, Bloomington, Indiana.
McCord, Beth K.
2004 *County Road 600 East and 700 North Newton County, Indiana Archaeological Field Reconnaissance.* Archaeological Resources Management Services, Ball State University, Muncie, Indiana.
2007 *A Profile of the Till Plain Archaeology: A Survey of Hancock County, Indiana.* Reports of Investigation 71. Archaeological Resources Management Service, Ball State University, Muncie.
Melhorn, Wilton. N.
1997 Indiana on Ice: The Late Tertiary and Ice Age History of Indiana Landscapes. In *The Natural Heritage of Indiana,* edited by M.T. Jackson, pp. 15-27. Indiana University Press, Bloomington, Indiana.
Mensforth, Robert P.
2001 Warfare and Trophy Taking in the Archaic Period. In *Archaic Transitions in Ohio And Kentucky Prehistory,* edited by Olaf H. Prufer, Sara E. Pedde and Richard S. Meindl, Kent State University Press, Kent, Ohio.
Meyer, A.H.
1935 The Kankakee "Marsh" of Northern Indiana and Illinois. *Michigan Academy of Science, Arts, and Letters Papers* 12:359-396. Ann Arbor, Michigan.
Meyers, Eric
1997 An Endangered Natural Resource: Wetlands. In *The Natural Heritage of Indiana,* edited by M. T. Jackson, pp. 76. Indiana University Press, Bloomington, Indiana.
Miller, George L.
2000 Comments on Bill Adams Time Lag Paper, unpublished paper, https://lists.asu.edu/cgi-bin/wa?INDEX. Accessed March 2015.

Miller, Joseph R.
2013 *A Distributional Archaeological Survey of the Southern Portion of Blackford County.* Reports of Investigation *80*, edited by Christine Keller. Applied Anthropology Laboratories, Ball State University, Muncie.
Miller, Joseph R, Victoria Kiefer and Kristin Kjeldsen
2012 *A Survey of Blackford County: A Data Enhancement Project.* Reports of Investigation 79, edited by Christine Keller. Applied Anthropology Laboratories, Ball State University, Muncie.
Miller, Rex K.
1941 McCain site, Dubois County, Indiana. *Indiana Historical Society* 2(1):1-60. Indianapolis, Indiana.
Miller, Shaun A.
2006 *An Archaeological Records Check: Proposed Small Structure Replacement on US 24 over Railroad Ditch (INDOT Des. No. 0200070) 0.66 miles west of US 41 of Kentland, Newton County, Indiana.* Cultural Resource Section, Indiana Department of Transportation, Indianapolis, Indiana.
Milton, Sherman A.
1966 Amphibians and Reptiles. In, *Natural Features of Indiana*, edited by Alton A. Lindsey, pp. 426-451. Indiana Academy of Science, Indianapolis, Indiana.
Moffatt, David
2009 *An Archaeological Records Check and Reconnaissance: Two Proposed Small Structure Replacement on SR 14 (INDOT Des. No. 0400006 and 0400007) Newton County, Indiana*. Cultural Resources Section, Indiana Department of Transportation, Indianapolis Indiana.
2010 *Bridge Replacement on SR 10 over Beaver Lake Ditch near Lake Village in Newton County.* Cultural Resources Section Indiana Department of Transportation, Indianapolis, Indiana.
Montet-White, Anta
1968 *The Lithic Industries of the Illinois Valley in the Early and Middle Woodland Period.* The University of Michigan, Ann Arbor, Michigan.
Moodie, Roy L.
1929 *The Geological History of the Vertebrates of Indiana and their Position in the Ancient North American Faun*a. Publication 90, Indiana Department of Conservation, Indianapolis, Indiana.
Mumford, Russell F.
1966 Mammals. In, *Natural Features of Indiana*, edited by Alton A. Lindsey, pp. 474-488. Indiana Academy of Science, Indianapolis, Indiana.
Munson, Cheryl A., Michael Strezewski, and C. Russell Stafford
2006 *Archaeological Investigations at the Prather Site, Clark County, Indiana: The 2005 Survey and Excavations.* Indiana University-Purdue University Fort Wayne, Fort Wayne, Indiana.
Murray, Emily, Jessie Moore, and Victoria Kiefer
2011 *A Survey of Montgomery County: A Data Enhancement Project.* Reports of Investigation 77, edited by Christine Keller. Applied Anthropology Laboratories, Ball State University, Muncie.
National Resources Conservation Service

2013 Web Soil Survey of Newton County, Indiana. United States Department of Agriculture. http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx. Accessed April 24, 2015.

Nelson, Lee H.
1964 *Nail Chronology as an Aid to Dating Old Buildings*. Technical Leaflet 48. American Association for State and Local History, Nashville Tennessee.

Newman, James E.
1966 Bioclimate. In, *Natural Features of Indiana*, edited by Alton A. Lindsey, pp. 171-180. Indiana Academy of Science, Indianapolis, Indiana.

ODOT
1991 *Coding System Manual for the East Liverpool, Ohio Urban Archaeology Project*. Archaeology Series No. 1, Ohio Department of Transportation, Columbus, Ohio.

Pace, Robert E.
1984 *Additional Archaeological Reconnaissance, Borrow Pit "A", Newton County Bridge #79, Contract No. B-14196.* Indiana State University, Terre Haute, Indiana.
1987 *Archaeological Records Search and Reconnaissance, RS-4856(2), 14-56-7348(1760A), SR 14 Bridge Over Kent Ditch, Newton County.* Indiana State University, Terre Haute, Indiana.

Parsell, Veronica
2012 *Phase 1a Archaeological Records Review and Reconnaissance for the Colfax Substation in Newton County, Indiana.* Cardno JFNew, Indianapolis, Indiana.

Pedde, Sara E., and Olaf H. Prufer
2001 Holocene Vegetation and Climate Changes in the Ohio Region. In *Archaic Transitions in Ohio and Kentucky Prehistory*, edited by Olaf H. Prufer, Sara E. Pedde and Richard S. Meindl, Kent State University Press, Kent, Ohio.

Peebles, Christopher S., and Michael J. Shott
1981 *The Distribution and Abundance of Archaeological Sites in the River Raisin Watershed, Michigan*. Paper presented at the 46th Annual Meeting of the Society for American Archaeology, San Diego.

Petty, Robert O. and Marion T. Jackson.
1966 Plant Communities. In, *Natural Features of Indiana*, edited by Alton A. Lindsey, pp. 264-296. Indiana Academy of Science, Indianapolis, Indiana.

Pitblado, Bonnie L.
2014 An Argument for Ethical, Proactive, Archaeologist-Artifact Collector Collaboration. *American Antiquity* 79(3):385-400.

Pollack, David
2004 *Caborn-Wellborn: Constructing a New Society after the Angel Chiefdom Collapse*. The University of Alabama Press, Tuscaloosa.

Redmond, Brian G. and Robert G. McCullough
2000 The Late Woodland to Late Prehistoric Occupations of Central Indiana. In, *Late Woodland Societies: Tradition and Transformation across the Midcontinent*, edited by Thomas E. Emerson, Dale L. McElrath, and Andrew C. Fortier, pp. 643-683. University of Nebraska Press, Lincoln, Nebraska.

Richards, Ronald

1984 The Pleistocene Vertebrate Collection of the Indiana State Museum with a List of the Extinct and Extralocal Pleistocene Vertebrates of Indiana. *Proceedings of the Indiana Academy of Science* 93:483-504.

Richards, Ronald L. and John O. Whitaker Jr.
1997 Indiana's Vertebrate Fauna: Origins and Change. In, *The Natural Heritage of Indiana*, edited by M.T. Jackson. Indiana University Press, Bloomington, Indiana.

Riley, T. J., G. R. Waltz, C. J. Bareis, A. C. Fortier, and K. E. Parker
1994 Accelerator Mass Spectrometry (AMS) Dates Confirm Early *Zea mays* in the Mississippi River Valley. *American Antiquity* 59:490–97.

Robertson, Elizabeth C.
2011 Reassessing Hypsithermal human-Environment Interaction on the Northern Plains. In, *Human Interaction with the Geosphere: The Geoarchaeological Perspective*, edited by Lucy Wilson. The Geological Society of London, Bath, United Kingdom.

Rosenberg, Seth A.
2004 *Roselawn Library Newton County, Indiana Archaeological Field Reconnaissance.* Archaeological Resources Management Services, Ball State University, Muncie, Indiana.

Rotman, Deborah, Rachel Mancini, Aaron Smith and Elizabeth Campbell
1998 *African-American and Quaker Farmers in East Central Indiana: Social, Political, and Economic Aspects of Life in Nineteenth-Century Rural Communities, Randolph County, Indiana.* Reports of Investigation 51. Archaeological Resources Management Service, Ball State University, Muncie.

Rourke-Jordan, V.A.M.
1979 *Archaeological Records Review Bridge No. 79 Newton County, Indiana.* Archaeological Resources Management Services, Ball State University, Muncie, Indiana.

Ruby, Bret J.
1994 *An Archaeological Investigation of Crab Orchard Tradition Settlement Patterns in Southwestern Indiana*. Reports of Investigation 94-15. Glenn A. Black Laboratory of Archaeology, Indiana University, Bloomington, Indiana.

Schaal, Lawrence A.
1966 Climate. In, *Natural Features of Indiana*, edited by Alton A. Lindsey, pp. 156-170. Indiana Academy of Science, Indianapolis, Indiana.

Schneider, Allen F.
1966 Physiography. In, *Natural Features of Indiana*, edited by Alton A. Lindsey, pp. 40-56. Indiana Academy of Science, Indianapolis, Indiana.

Seeman, Mark F.
1992 *Cultural Variability in Context: Woodland Settlements of the Mid-Ohio Valley*. The Kent State University Press, Kent, Ohio.

Shane, Linda
1976 Late-glacial and Postglacial Palynology and Chronology of Darke County, West Central Ohio. Unpublished Ph.D. Dissertation, Kent University, Kent, Ohio.

Shane, Linda C. K., Gordon G. Snyder, and Katherine H. Anderson
2001 Holocene Vegetation and Climate Changes in the Ohio Region. In, *Archaic Transitions in Ohio and Kentucky Prehistory*, edited by Olaf H. Prufer, Sara E. Pedde and Richard S. Meindl, Kent State University Press, Kent, Ohio.

Shott, Michael J.
1993 Spears, Darts, and Arrows: Late Woodland Hunting Techniques in the Upper Ohio Valley. *American Antiquity* 58(3):425-443.
2004 Representativity of the Midwestern Paleoindian Sample. *North American Archaeologist* 25(2): 189-212.
2008 equal o nll roofht w ded I e vsbr cted: A Proposal for Conservation of Private Collections in American Archaeology. *Archaeological Record* 8:30-34.
Shurig, Donald G.
1970 *Engineering Soils Map of Wabash County, Indiana*. Purdue University, West Lafayette, Indiana.
Smith, Andrew, Beth K. McCord and Donald R. Cochran
2008 *Glacial Sluiceways and Modern Streams: An Archaeological Survey of the Stony Creek Valley in Hamilton County, Indiana*. Reports of Investigation 74, Archaeological Resources Management Service, Ball State University, Muncie.
Smith, Andrew, Rachel Klabacka and Beth McCord
2009 *Archaeological Investigations in the Upper Wabash River Valley: A 2009 Survey in Huntington, Miami and Wabash Counties, Indiana*. Applied Anthropology Laboratories, Ball State University, Muncie, Indiana.
Smith, Bruce D., and Richard A. Yarnell
2009 Initial formation of an indigenous crop complex in eastern North America at 3800 BP. *Proceedings of the National Academy of Sciences, USA* 106(16):6561-6566.
Smith, Edward E.
1986 The Swan's Landing Site: An Early Archaic Lithic Reduction and Tool Manufacturing Site in Harrison County, Indiana. *Current Research in the Pleistocene* 4:71-72. College Station, Texas.
Stafford, Russell C.
1987 *Archaeological Records Search, Reconnaissance and Recommendations, Project RS-5356(), 55-56-7284, Bridge Carrying SR 55 Over Kankakee River, Newton-Lake County Line.* Indiana State University, Terre Haute, Indiana.
1988 *Archaeological Records Search, Reconnaissance and Recommendations, Goodland Wastewater Works Project, Newton County, Indiana.* Indiana State University, Terre Haute, Indiana.
Stafford, C. Russell, and Mark Cantin
2009 Archaic Period Chronology of Southern Indiana. In, *Archaic Societies: Diversity and Complexity across the Midcontinent*, edited by Thomas E. Emerson, Dale L. McElrath, and Andrew C. Fortier, pp. 287-316. State University of New York Press, Albany, New York.
Standler, Ronald B.
2006 Shotshell Cartridge History. Electronic document. http://www.rbs0.com/shotshell.htm. Accessed February 2015.
Stelle, Lenville
2001 *An Archaeological Guide to Historic Artifacts of the Upper Sangamon Basin*. Center f or Social Research, Parkland College, Champaign, Illinois.
Stelle, Lenville J. and Thomas P. Duggan
2003 An Archaeological Guide to Chert Types of East-Central Illinois. http://virtual.parkland.edu/lstelle1/len/biface_guide/chert/documents/chert_types.html

Stephenson, P. Ranel
1984 *The Archaeological Resources of the Upper White Drainage with Emphasis on the Woodland Period*. Reports of Investigation 46. Archaeological Resources Management Service, Ball State University, Muncie.
Stillwell, Larry N.
1999 *An Archaeological Field Reconnaissance of a Proposed Cellular Phone Tower (Project #SPECM-028) near Fair Oaks, Newton County, Indiana.* Archaeological Consultants of Ossian, Muncie, Indiana.
2000 *An Archaeological Field Reconnaissance of Two Proposed Housing Lots in Brook; Newton County, Indiana.* Archaeological Consultants of Ossian, Muncie, Indiana.
2001 *An Archaeological Field Reconnaissance of a Proposed Cellular Phone Tower (Project #RT-736a) near Mount Ayr, Newton County, Indiana.* Archaeological Consultants of Ossian, Muncie, Indiana.
2002 *An Archaeological Field Reconnaissance of a Proposed Small Structure Replacement on US 24 over Hunter Ditch (Project #NH-14-1(), Des. 98010960) in Goodland, Newton County, Indiana.* Archaeological Consultants of Ossian, Muncie, Indiana.
2004 *An Archaeological Field Reconnaissance of a Proposed Expanded Right-of-Way for the SR 14 and I-65 Interchange (Project #IM-65-8(151), Des. 0200346) in Jasper and Newton Counties.* Archaeological Consultants of Ossian, Muncie, Indiana.
2005 *An Archaeological Field Reconnaissance of a Proposed Alteration of Montgomery Ditch Near Goodland, Newton County, Indiana.* Archaeological Consultants of Ossian, Muncie, Indiana.
2006 *An Archaeological Reconnaissance of the Proposed SR 10 Improvements (Des. 01006441) in Jasper and Newton Counties, Indiana.* Archaeological Consultants of Ossian, Muncie, Indiana.
2010a *An Archaeological Field Reconnaissance of a Proposed Telecommunications Facility (Project #0017-647) in Goodland, Newton County, Indiana.* Archaeological Consultants of Ossian, Muncie, Indiana.
2010b *An Archaeological Field Reconnaissance of a Proposed Telecommunications Facility (Project #0017-558) near Fair Oaks, Newton County, Indiana.* Archaeological Consultant of Ossian, Muncie, Indiana.
2013 *An Archaeological Field Reconnaissance of the Proposed Replacement of Bridge No. 127 (Des. No. 1297542) in Newton County, Indiana.* Archaeological Consultants of Ossian, Muncie, Indiana.
Surface-Evans, Sarah
2015 Intra-Wetland Land Use in the Kankakee Marsh Region of Northwestern Indiana. *Midcontinental Journal of Archaeology* 40(2):166-189.
Surface-Evans, Sarah L., Donald H. Gaff, and R. Brian Somers
2005 *Phase II Subsurface Investigations of Five Multicomponent Prehistoric Archaeological Sites (12-La-84, 91, 92, 522, 526) in the Kankakee Marsh of Lake County, Indiana*. Indiana University-Purdue University Fort Wayne, Fort Wayne, Indiana.
Swartz, Ben K. Jr.
1981 *Indiana's Prehistoric Past*. Revised edition. Ball State University, Muncie, Indiana.
Swihart, Matthew R. and Kevin C. Nolan

2013 *Distributional Analysis of Archaeological Remains in the Upper White River Basin: An Archaeological Survey of Hamilton County, Indiana*. Applied Anthropology Laboratories, Ball State University, Muncie, Indiana.

2014 *Investigation of Fort Ancient Settlement and Community Patterns: An Archaeological Survey of Dearborn County, Indiana.* Applied Anthropology Laboratories, Ball State University, Muncie, Indiana.

Taylor, Amanda J.

2009 *Newton County Indiana Historic Sites and Structures Inventory.* Indiana Division of Historic Preservation and Archaeology, Indianapolis, Indiana.

Tomak, Curtis H.

1984 *An Archaeological Records Check for Indiana Department of Highways Project 55-56-7284 in Newton and Lake Counties.* Indiana Department of Highways, Indianapolis, Indiana.

USDA/NRCS

2002 SOILS_STATSGO_IN: Soil Associations in Indiana (U.S. Dept. of Agriculture, 1:250,000, Polygon Shapefile). State Soil Geographic (STATSGO) data base for Indiana, 1994. U.S. Department of Agriculture, Natural Resources Conservation Service, Fort Worth, Texas. <http://igs.indiana.edu/arcims/statewide/download.html>

Waguespack, Nicole M., and Todd A Surovell

2003 Clovis Hunting Strategies, or How to Make Out on Plentiful Resources. *American Antiquity*, 68(2):333-352.

Wappenstein, Rick

1999 *Phase Ia Archaeological Field reconnaissance INDOT Project No. STP-4956(), Des. No. 9701700; Bridge Replacement on SR 55 over Durgess Ditch, Approximately 1.3km (0.81 miles) South of US 24 in Newton County, Indiana.* Landmark Archaeological and Environmental Services, Inc., Sheridan, Indiana.

Waters, Nikki

1999 *Bridge #57 Newton County, Indiana Archaeological Records Review.* Archaeological Resources Management Services, Ball State University, Muncie, Indiana.

Wayne, William J.

1963 *Pleistocene Formations in Indiana*. Indiana Department of Conservation, Geological Survey Bulletin No. 25, Bloomington, Indiana.

1966 Ice and land. In, *Natural Features of Indiana*, edited by Alton A. Lindsey, pp. 21-39. Indiana Academy of Science, Indianapolis, Indiana.

Wayne, W.J. and J.H. Zumberge

1983 Pleistocene Geology of Indiana and Michigan. In, *The Quaternary Geology of the United States: A Review Volume for the VII Congress of the International Association for Quaternary Research*, edited by H.E. Wright and D.G. Frey, pp. 63-84. Princeton University Press, Princeton, New Jersey.

Webster, J. Dan

1966 Birds. In, *Natural Features of Indiana*, edited by Alton A. Lindsey, pp. 452-473. Indiana Academy of Science, Indianapolis, Indiana.

Wepler, William R.

1978 *Newton County Records Review for Proposed Improvements to Kentland Airport.* Department of Anthropology, Ball State University, Muncie, Indiana.

West, Bryan

1988 *Archaeological Field Reconnaissance I-65 Borrow Area Newton County, Indiana.* Archaeological Resources Management Service, Ball State University, Muncie, Indiana.

Westermeier, Scott

1997 *Morocco Sewage Treatment Plant Newton County, Indiana.* Archaeological Resources Management Services, Ball State University, Muncie, Indiana.

White, Andrew A., Craig Arnold, and Joshua Wells

2007 *The Late Pleistocene and early Holocene Occupation of the Kankakee Region of Northwest Indiana.* Indiana University-Purdue University, Fort Wayne, Indiana.

Whitehead, Donald R.

1997 In the Glacier's Wake: Patterns of Vegetation Change Following Glaciation. In, *The Natural Heritage of Indiana*, edited by M.T. Jackson, pp. 102-109. Indiana University Press, Bloomington, Indiana

Woods, Alan J., James M. Omernik, C. Scott Brockman, Timothy D. Gerber, William D. Hosteter, and Sandra H. Azevedo

2003 Ecoregions of Indiana and Ohio. United State Environmental Protection Agency, Washington, D.C.

Yellowmap World Atlas

2015 Indiana Blank Map. Electronic document, http:www.yellowmaps.com/map/ Indiana-blank-map-93.htm, accessed March 2015.

Zoll, Mitch

2010 *Archaeological Field Reconnaissance for a Open Ditch and Storm Sewer in Newton County, Indiana.* Pioneer Consulting Services, Inc., Muncie, Indiana.

Zoll, Mitchell and Brad King

2010 *Archaeological Field Reconnaissance Kessler Ditch Reconstruction Newton County, Indiana.* Pioneer Consulting Services, Inc., Muncie, Indiana.

Zunker, Kim

2001 *Newton County Library Site Newton County, Indiana.* Archaeological Resources Management Services, Ball Sate University, Muncie, Indiana.

Zunker, Kim and Kimberly Nagle

2002 *Replacement at US 24 over O'Brien Ditch Newton County, Indiana, Archaeological Field Reconnaissance.* Archaeological Resources Management Services, Ball State University, Muncie, Indiana.